AL.2.2002-173
NO ILL
University of Alberta Library
0 1620 3452392 6

Mathematics 4

Module 7

Measurement

Learning Technologies Branch

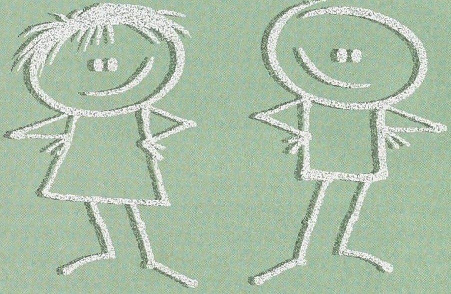
Alberta
LEARNING

Digitized by the Internet Archive
in 2016 with funding from
University of Alberta Libraries

https://archive.org/details/mathematics407albe

Mathematics 4

Module 7
Measurement



Learning
Technologies
Branch

Alberta
LEARNING

Mathematics 4
Module 7: Measurement
Student Module Booklet
Learning Technologies Branch
ISBN 0-7741-1832-6

This document is intended for	
Students	✓
Teachers	✓
Administrators	
Home Instructors	✓
General Public	
Other	

The Learning Technologies Branch has an Internet site that you may find useful. The address is as follows:

http://www.learning.gov.ab.ca/ltb

The use of the Internet is optional. Exploring the electronic information superhighway can be educational and entertaining. However, be aware that these computer networks are not censored. Students may unintentionally or purposely find articles on the Internet that may be offensive or inappropriate. As well, the sources of information are not always cited and the content may not be accurate. Therefore, students may wish to confirm facts with a second source.

ALL RIGHTS RESERVED

Copyright © 2000, the Crown in Right of Alberta, as represented by the Minister of Learning, Alberta Learning, 11160 Jasper Avenue, Edmonton, Alberta T5K 0L2. All rights reserved. Additional copies may be obtained from the Learning Resources Distributing Centre.

No part of this courseware may be reproduced in any form, including photocopying (unless otherwise indicated), without the written permission of Alberta Learning.

Every effort has been made both to provide proper acknowledgement of the original source and to comply with copyright law. If cases are identified where this effort has been unsuccessful, please notify Alberta Learning so that appropriate corrective action can be taken.

IT IS STRICTLY PROHIBITED TO COPY ANY PART OF THESE MATERIALS UNDER THE TERMS OF A LICENCE FROM A COLLECTIVE OR A LICENSING BODY.

UNIVERSITY LIBRARY
UNIVERSITY OF ALBERTA

Welcome!

Mathematics 4 contains nine modules. Work through the modules in the order given, since several concepts build on each other as you progress through the course.

Mathematics 4

Module 1
Data Management

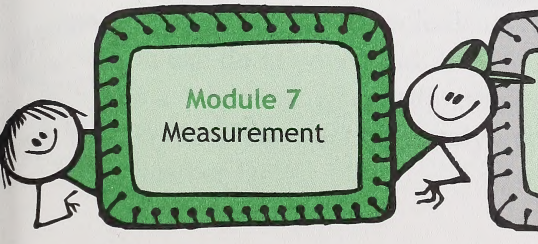
Module 2
Number Concepts and Patterns

Module 3
Fractions and Decimals

Module 4
Addition and Subtraction

Module 5
Multiplication

Module 6
Division



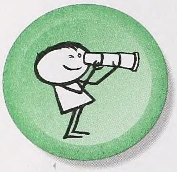
Module 7
Measurement

Module 8
Exploring Geometry

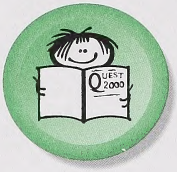
Module 9
Investigating Outcomes

Icons

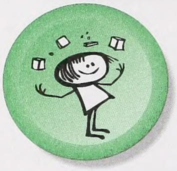
The book you are presently reading is called a Student Module Booklet. You will find icons used throughout it. Read the following explanations to find out what each icon tells you to do.



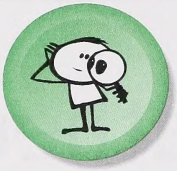
Pay close attention to important words or ideas.



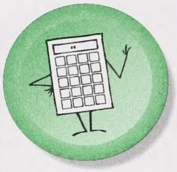
Refer to the textbook *Quest 2000: Exploring Mathematics*.



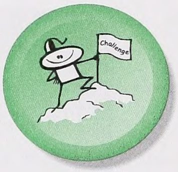
Use manipulatives, cut-out learning aids, or pull-out pages.



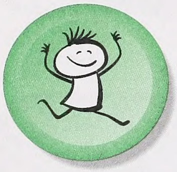
Do an activity to review the concept.



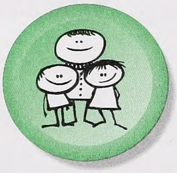
Use a calculator.



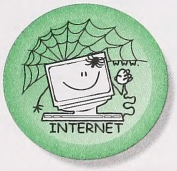
Prepare to do a Challenge activity.



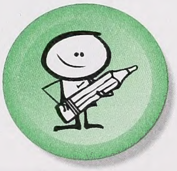
Do an activity just for fun!



Do an activity with your home instructor.



Use the Internet.

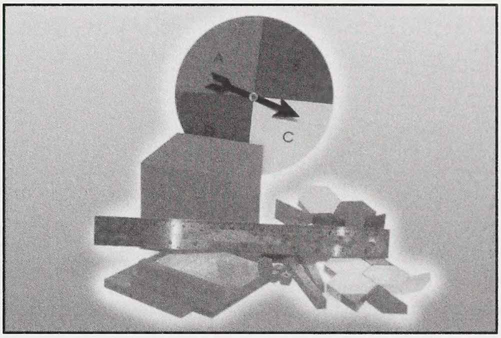


Use the Answer Key to Self-Marking Activities in the Appendix to correct activities.

Information for the Student

The Grade 4 Mathematics course is designed to keep you actively involved in learning as you progress through the daily lessons in each of the nine modules. Besides the Student Module Booklets, you will also need a copy of the Grade 4 Mathematics textbook called *Quest 2000: Exploring Mathematics.* The textbook contains pictures, information, questions, and problems that are referred to in the modules. Each module also requires you to complete one or more Assignment Booklets to be sent to your teacher for marking.

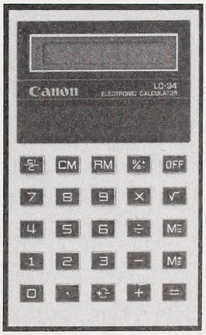
Manipulatives



Manipulatives are hands-on materials that you will be using to help you learn new concepts and ideas. They include things like base ten blocks, geoboards, spinners, counters, polygon shapes, tiles, rulers, and metre-sticks. Don't worry if you don't have all of these manipulatives. Some can be found in the Cut-Out Learning Aids section of the Appendix in several of the modules. Some you may be asked to make from materials found in your own home. However, it is highly recommended that you have a set of base ten blocks. They will be used often to help you to understand many new math concepts.

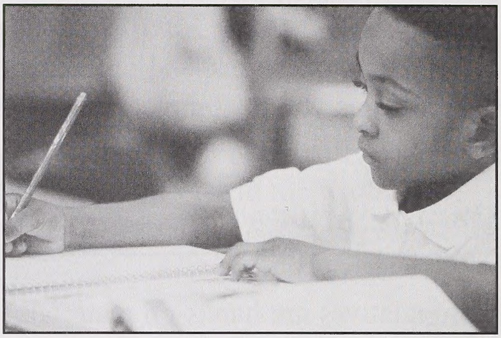
You should use manipulatives whenever you think they will help you understand something new you are learning. Manipulatives can also be useful when you are sharing or discussing what you know with your home instructor.

Calculators



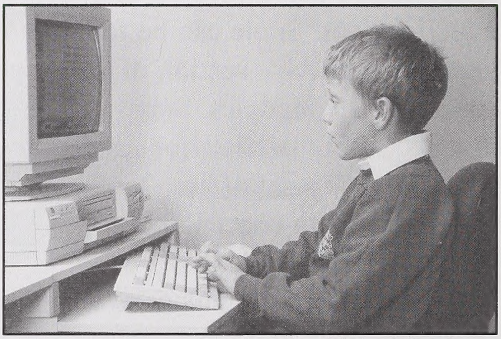
You will need a calculator for many of the activities in Mathematics 4. It is important to remember that a calculator is a tool to be used when doing difficult calculations and when investigating what numbers can do. Don't rely on the calculator for calculations that you can do in your head. For example, you would not use a calculator when estimating or doing mental math. Both of these activities rely upon mastering the basic number facts.

Basic Number Facts



You will practise the basic facts on several days of each module. Each drill is timed to encourage you to work quickly. At first, you may not do very well because you may not know all of the number facts yet, or you may have forgotten some of the number facts you learned last year. Don't worry. By practising the facts regularly, your scores will improve over time. Strategies to help you learn the number facts will be presented in the lessons.

Computers



If you have your own computer at home, you may already know some computer software programs that help you to learn mathematics. There are also many websites on the Internet that provide math activities for students to do. Throughout this course, you will find optional activities that refer to software programs and Internet websites. You should do these activities only when you have finished the daily assigned work. **Note:** Always check with your home instructor before you log onto the Internet. **Remember that any Internet website address given in this module is subject to change.**

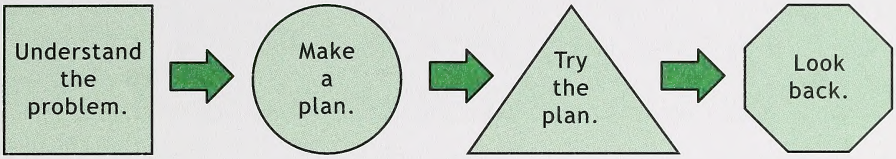
Journal Writing

In each Assignment Booklet, you will often be asked to complete a journal entry about something you have been learning in the module. Being able to put into your own words what you have learned is an important skill. It will help you think about what you know as well as help your teacher understand your thinking.

Problem-Solving Skills

You are already familiar with problem solving from earlier grades. This course will continue to help you develop strategies to make you a better problem solver. There are four steps that can be used to solve most problems.

The Four-Step Process



Step 1

Understand the problem.

In this step, you need to spend time reading over the problem in order to understand what you are being asked to find. One way to see if you understand the problem is to cover it up and then try restating it in your own words. Sometimes it might seem like not enough information is given. If this happens, try asking yourself the question, "What do I already know that will help me solve this problem?"

Step 2

Make a plan.

In this step, you decide on the method or strategy you will use to solve the problem. Different problems require different strategies. Most problems can be solved in more than one way. In this course, you will be looking at the following seven strategies:

- acting out the problem
- guessing and checking
- making an organized list
- drawing a diagram
- making a table or chart
- looking for a pattern
- making it simpler

You will be introduced to these strategies as you move through the modules. However, you may review each of the strategies at any time by turning to the Appendix of Module 1.

Remember, there is no one "right" way to solve a problem. The method or strategy you use may be different than the one your home instructor or someone else doing the problem would use. Sometimes you will find that more than one strategy on the list can be used to solve a problem. In fact, sometimes you may decide to invent a strategy of your own that is not even on the list.

Step 3

Try the plan.

In this step, you try out one of your strategies to see if it works to solve the problem. Don't worry if you can't find the answer immediately. Some problems take more than one step. You may also find it necessary to use your calculator to do some of the calculations.

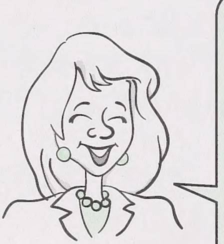
Sometimes, as you try to solve the problem, you'll find that your strategy isn't working. Don't give up. Try another method instead.

Step 4

Look back.

In this step, you take time to look at your answer and ask, "Is my answer reasonable? Does it make sense?" Writing your answer in a complete sentence may help you to see if, in fact, you have answered the question. If not, you may have to check your calculation for errors or, perhaps, try another strategy.

This is also a good time to look at the strategy you used and to think about how you could use it again in other problem-solving situations. Take time to share your strategies with your home instructor, and compare your method with the strategy your home instructor might use.



Remember, problem solving is a skill you need and will use throughout your life. The more practice you have with solving problems, the better your problem-solving skills become. Problems don't always have just one "right" answer. Some problems have several possible answers, just as some problems may be solved in several different ways.

Contents

Module Overview 1

Section 1: Measuring Length and Distance
Day 1: Exploring Length, Width, Height, and Distance 4
Day 2: Using Centimetres, Millimetres, and Decimetres 13
Day 3: Problem Solving 26
Day 4: Comparing and Changing Units 33
Day 5: Writing Measurements Using Decimals 40
Day 6: Exploring Metres 49
Day 7: Metres and Kilometres 58
Day 8: Graphing and Measuring 68
Day 9: Putting It All Together (I) 75
Day 10: Assessing What You Know (I) 77

Send in Assignment Booklet 7A.

Section 2: Understanding Perimeter and Area
Day 11: What Is Perimeter? 82
Day 12: Estimating and Comparing Perimeters 90
Day 13: Circumference 103
Day 14: Perimeter of Polygons 112
Day 15: All About Area 123
Day 16: Learning More About Area 135
Day 17: Putting It All Together (II) 146
Day 18: Assessing What You Know (II) 148

Send in Assignment Booklet 7B.

Section 3: Looking at Capacity, Mass, Money, and Time

Day 19: How Much Does It Hold? 152
Day 20: Solving Problems About Capacity 163
Day 21: Learning About Mass 175
Day 22: Comparing Kilograms and Grams 187
Day 23: Learning About Money 197
Day 24: More About Money 209
Day 25: It's About Time! 217
Day 26: Telling Time 224
Day 27: Putting It All Together (III) 236
Day 28: Assessing What You Know (III) 238

Send in Assignment Booklet 7C.

Appendix

Glossary 242
Answer Key to Self-Marking Activities 244
Image Credits 291
Cut-Out Learning Aids
Number Facts Progress Chart for Module 7

Overview

Module 7: Measurement

Section 1: Measuring Length and Distance

Section 2: Understanding Perimeter and Area

Section 3: Looking at Capacity, Mass, Money, and Time

Module 7: Measurement

Understanding measurement is an important part of your everyday life. You use measurement skills when you

- read time on a clock
- read measurements on a package
- count money
- prepare a recipe
- build something
- weigh yourself

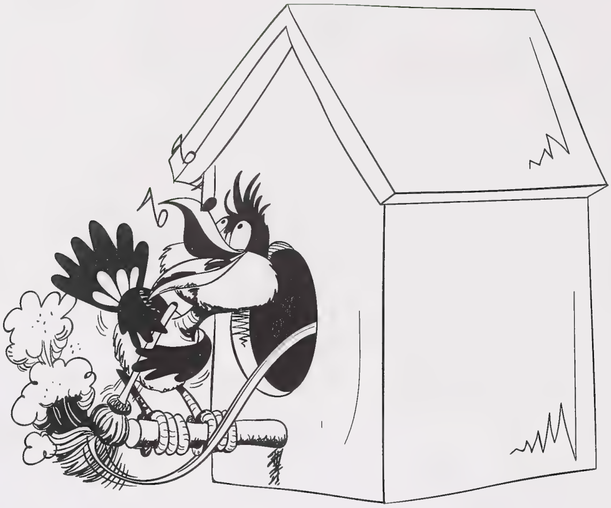
As you work through this module, you will practise measuring length and distance and finding the perimeter and area of different figures. You will also learn more about capacity, mass, money, and time.

There are **three** Assignment Booklets for Module 7.
You should send in Assignment Booklet 7A after completing Day 10.
You should send in Assignment Booklet 7B after completing Day 18.
You should send in Assignment Booklet 7C after completing Day 28.

Section 1

Measuring Length and Distance

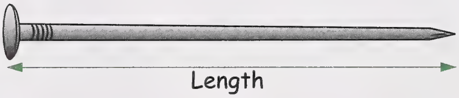
Exploring Length, Width, Height, and Distance



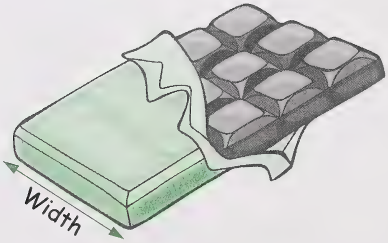
Jenna and her younger sister Richelle are excited about building a birdhouse for their backyard. They know that they have to plan the **length**, **width**, and **height** of the birdhouse before they begin building.

Length, width, and height are **straight line** measurements.

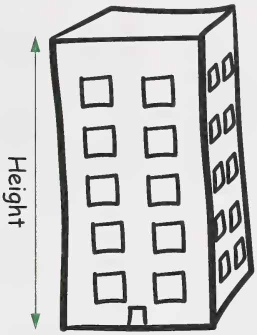
Length is the distance from one end to the other end.



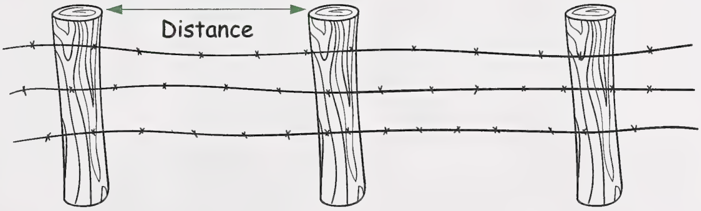
Width is the distance from one side to the other side.



Height is the distance from the top to the bottom.



Distance is also measured in a straight line. Distance is the measurement of space between objects or places.



1. Match each word from the box to its definition by printing the correct word beside each definition.

height	length	distance	width

a. how long an object is ____________________

b. how wide an object is ____________________

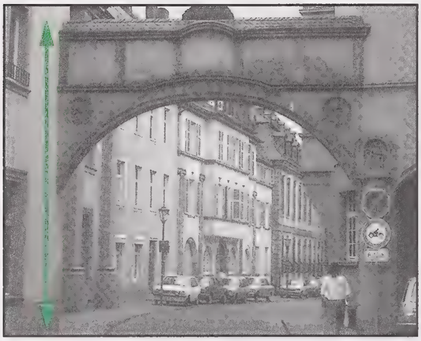
c. how tall an object is ____________________

d. how far away an object is ____________________

Check your answers in the Appendix.

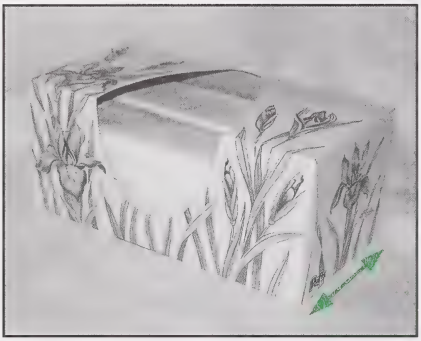
2. Look at the following pictures. Write **length**, **distance**, **width**, or **height** on the line beside the picture to tell what is being measured.

a.



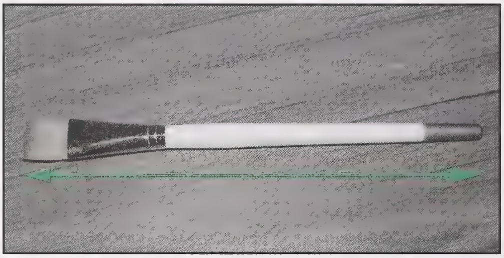
____

b.

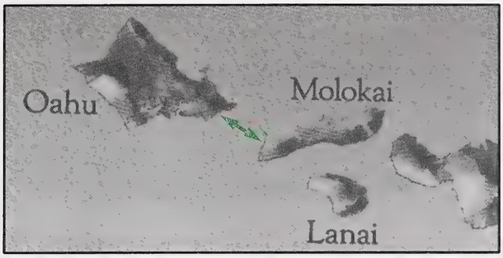


____

c.



____

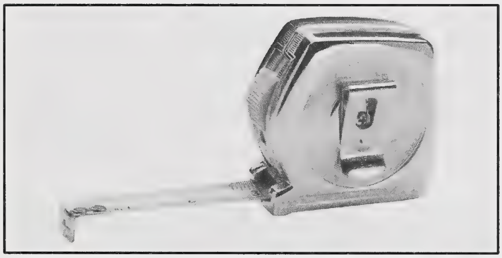
d. 

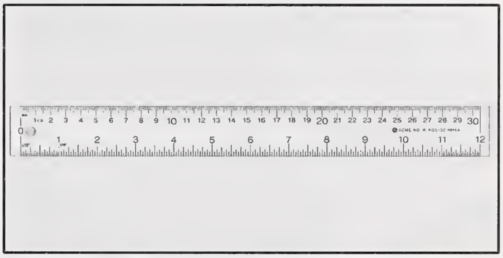
____

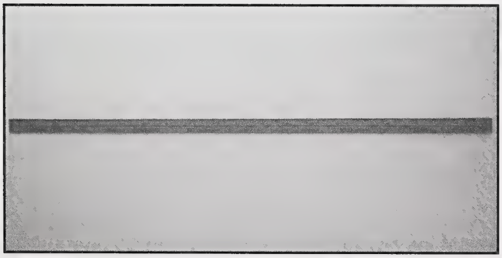
Check your answers in the Appendix.

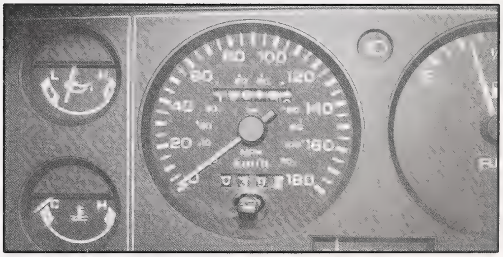
Measurement Tools

Jenna and Richelle know that they have to measure the pieces for the birdhouse carefully before they cut them out and put them together. The first step is to decide what measuring tool to use. They need a tool that will help them measure length, height, and width.









They know that a car odometer measures distance, so that will not work. The metre-stick is too large to handle easily. They decide to use a 30-cm ruler to measure the pieces for the birdhouse.

3. Which tool would you use to measure each of the following objects?

30-cm ruler
car odometer
metre-stick
measuring tape

a. the length of your math textbook ______________________________

b. the height of your home instructor ______________________________

c. the distance to your doctor's office ______________________________

Check your answers in the Appendix.

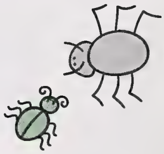
Units of Measurement

The girls notice that the ruler is marked in **centimetres**. There are also tiny divisions between each centimetre called **millimetres**. Some of the other tools show different units of measurement. The metre-stick and the tape measure show **decimetres** and **metres**. The car odometer measures in **kilometres**.

The units of measurement used to measure length and distance are millimetres, centimetres, decimetres, metres, and kilometres.

Millimetres are used to measure very tiny objects, like small insects or the thickness of a coin.

Centimetres are used to measure objects that you can hold in your hands, such as books, shelves, windows, or packages.



Decimetres are used to measure larger objects like the height of a door or the width of a table.

Metres are used to measure larger objects like buildings, sidewalks, trees, or roadways.

Kilometres are used to measure long distances like the distance to the closest town or the length of a river.

The shortened form of these measurement units are often used when recording length, width, height, and distance.

Unit	Short Form
Millimetres	mm
Centimetres	cm
Decimetres	dm
Metres	m
Kilometres	km

Look at the picture on pages 264 and 265 of your textbook. Read the signs carefully. Use the picture to answer questions 4 and 5.

4. Find signs that tell about **height** measurements. What unit is used to measure height?

   ____

5. Find signs that tell about distance. What units are used to measure distance?

   ____

Check your answers in the Appendix.

Basic Number Facts Practice

Turn to the Number Facts Progress Chart for Module 7 in the Appendix. Remove the chart from the Appendix and hang it in your study area. You will use this chart to record your scores for the number facts drills in Module 7.

Ask your home instructor to time you as you complete the following exercises. Your goal is to complete all 25 questions in each exercise in 2 minutes. At the end of 2 minutes, count up how many questions you were able to complete. Write this number in the chart below. Then use the answer key in the Appendix to mark the exercise, and record your score in the space provided. Before you move on, go back and complete any questions you did not finish during the 2 minutes. Mark these questions using the answer key as well.

Basic Number Facts Practice

Division Number Facts

Number Completed in 2 Minutes ________

Number Correct in 2 Minutes ________

Multiplication Number Facts

Number Completed in 2 Minutes ________

Number Correct in 2 Minutes ________

Record your score on the Number Facts Progress Chart.

6. Division Number Facts
Timed Exercise: 2 minutes

$9\overline{)72}$ $9\overline{)45}$ $4\overline{)36}$ $6\overline{)54}$ $7\overline{)49}$

$64 \div 8 =$ $35 \div 7 =$ $27 \div 9 =$ $48 \div 8 =$ $40 \div 5 =$

$6\overline{)36}$ $8\overline{)24}$ $5\overline{)20}$ $8\overline{)32}$ $9\overline{)18}$

$42 \div 6 =$ $18 \div 6 =$ $56 \div 7 =$ $15 \div 3 =$ $24 \div 6 =$

$3\overline{)21}$ $6\overline{)30}$ $7\overline{)42}$ $7\overline{)63}$ $4\overline{)28}$

Check your answers in the Appendix.

STOP

7. Multiplication Number Facts
Timed Exercise: 2 minutes

$\begin{array}{r} 6 \\ \times\ 2 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ \times\ 9 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ \times\ 9 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times\ 4 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ \times\ 6 \\ \hline \end{array}$

$9 \times 3 =$ $8 \times 3 =$ $8 \times 8 =$ $5 \times 9 =$ $5 \times 8 =$

$\begin{array}{r} 5 \\ \times\ 4 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ \times\ 6 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ \times\ 9 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ \times\ 7 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ \times\ 5 \\ \hline \end{array}$

$2 \times 9 =$ $5 \times 5 =$ $7 \times 7 =$ $9 \times 5 =$ $8 \times 7 =$

$\begin{array}{r} 7 \\ \times\ 6 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ \times\ 8 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ \times\ 9 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ \times\ 8 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ \times\ 9 \\ \hline \end{array}$

Check your answers in the Appendix.

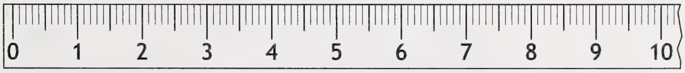
Turn to Assignment Booklet 7A, and complete the activities for Day 1.

Using Centimetres, Millimetres, and Decimetres

Jenna and Richelle need to cut several boards and nail them together to make their birdhouse. They are going to use the centimetre ruler to draw a pattern on pieces of paper before they cut the boards.

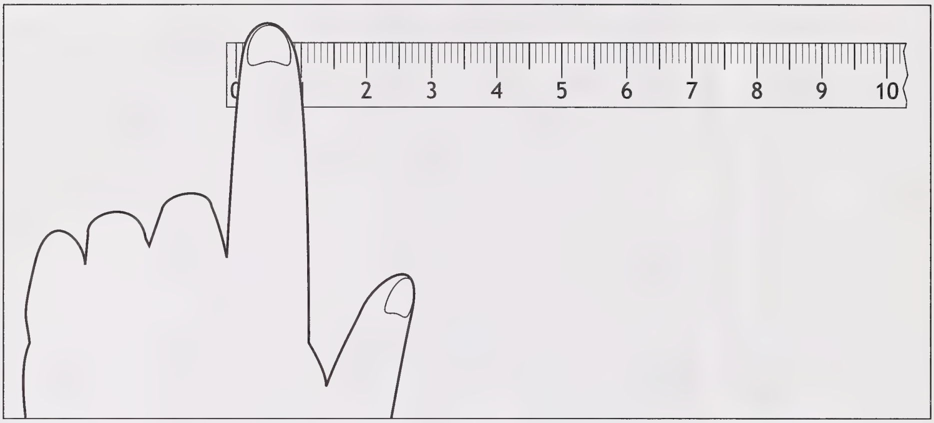
How Big Is a Centimetre?

Take out a centimetre ruler. If you don't have one, turn to the Appendix and cut out the centimetre ruler for Day 2 in the Cut-Out Learning Aids section.



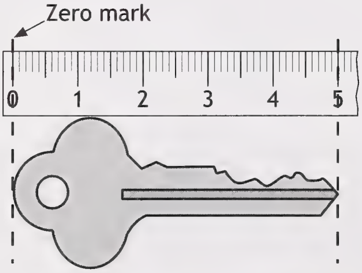
Look carefully at the marks on the ruler. You will see numbered marks with smaller divisions between them. The numbered marks are used to measure **centimetres**. The smaller marks show **millimetres**.

Place one of your index fingers on the ruler. You will notice that 1 cm is about the same size as the width of your finger.



Measuring with a Centimetre Ruler

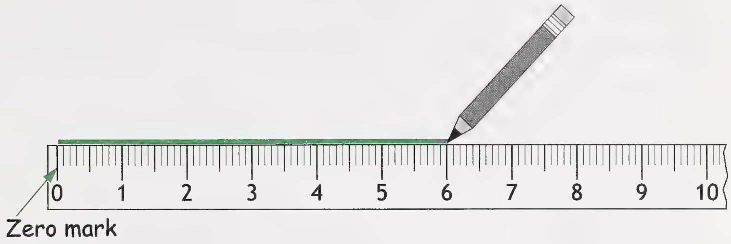
To measure an object using a centimetre ruler, line up the zero mark with one end of the object. Look down the ruler and note the numbered division that is nearest to the other end of the object. This number tells you the length of the object in centimetres.



The key is 5 cm long.

To draw a line that needs to be a certain length, make a point or mark on the paper. Line up the zero mark with your point and then draw a line along the edge of your ruler to the distance you need.

If the line is to be 6 cm long, place the zero mark on your ruler beside the starting point you have drawn. Move your pencil from 0 cm to 6 cm along the edge of your ruler. Be exact. Begin drawing the line **exactly** at 0 cm and stop drawing the line **exactly** at 6 cm.



1. Look around your home. Use a centimetre ruler to find **three** objects that measure 1 cm in width or length. Write the names of the objects here.

   - ______________________________
   - ______________________________
   - ______________________________

2. With help from your home instructor, measure the length or width of **four** small objects in your home. Measure to the closest centimetre. If the objects are not exact centimetres, don't worry about it for now.

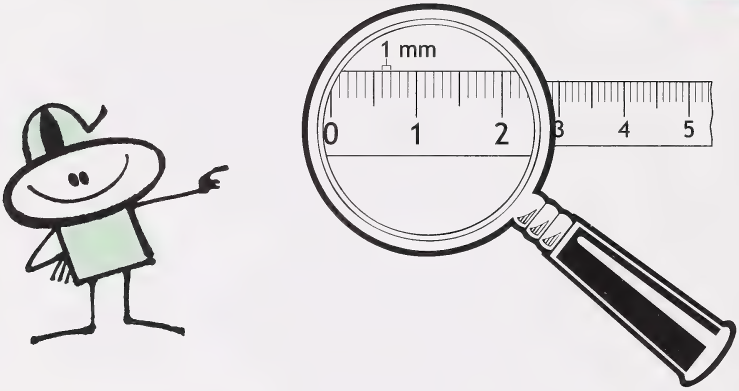
Object	**Measurement in Centimetres on One Side**

Check your answers in the Appendix.

Taking a Look at Millimetres

Look at your 30-cm ruler. The numbers show centimetres. Between the numbers you can see smaller lines that are close together. The tiny space between the lines equals **one millimetre**. The short way to write this is 1 mm.

The picture shows 1 mm.



Millimetres are very small units.

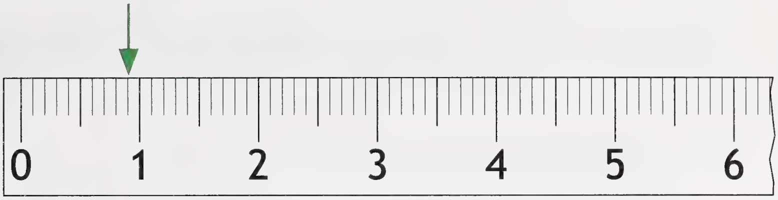
Objects that measure 1 mm would be the thickness of a pencil lead or the thickness of a dime. Check these out on your ruler.

3. Look around your home. Find **three** objects that would measure close to 1 mm. Use your ruler to help you.

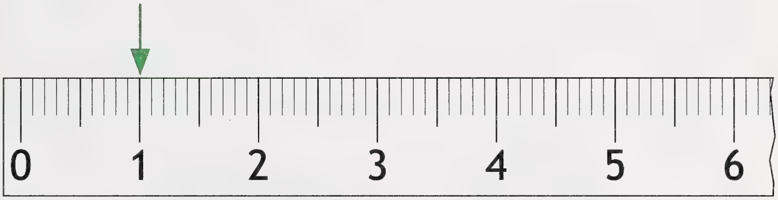
- ______________________________
- ______________________________
- ______________________________

4. How many millimetres are shown by the arrow in each of these pictures? (These rulers are **much larger** than your actual centimetre ruler to help you practise reading millimetres.) Count the spaces and write the measurement in millimetres.

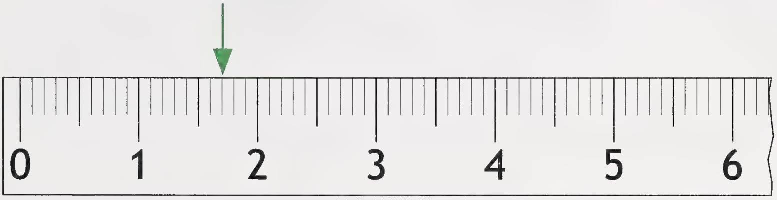
a. __________ mm



b. __________ mm



c. __________ mm



Check your answers in the Appendix.

5. Look carefully at your ruler. How many millimetres are in each of the following measurements?

a. 1 cm = __________ mm

b. 3 cm = __________ mm

c. 4 cm = __________ mm

d. 9 cm = __________ mm

6. Use your ruler to find how many centimetres are in each of the following measurements.

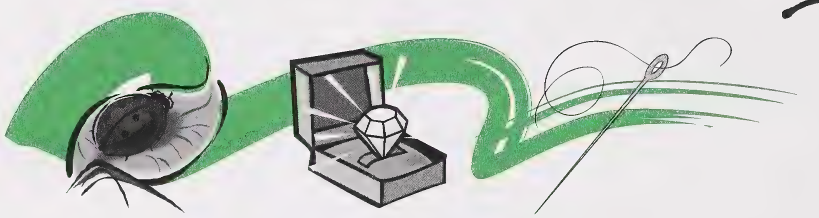
a. 60 mm = __________ cm
b. 40 mm = __________ cm

c. 50 mm = __________ cm
d. 110 mm = __________ cm

Check your answers in the Appendix.

Using Millimetres

Many tiny objects around you can be measured in millimetres. For example, the length of a small insect would be measured in millimetres. The length of your eyelash, the width of a diamond on a ring, the width of a pencil, and the length of a needle would all be measured in millimetres.



If you need a measurement to be exact, you may measure or draw using millimetres.

7. Draw a line for each of these measurements. Use your ruler. Be exact when you are drawing the lines.

a. 6 cm

b. 10 cm

c. 12 cm

d. 25 mm

e. 38 mm

f. 100 mm

Have your home instructor help you check your answers.

Did you notice that the line you drew for question 7.b. is the same length as the line you drew for question 7.f.? The same line can be named in two different ways. You will learn more about this in later lessons.

What Is a Decimetre?

8. Use your centimetre ruler to measure the bottom of a 2-L milk container or the shorter side of a tissue box. Write the measurement.

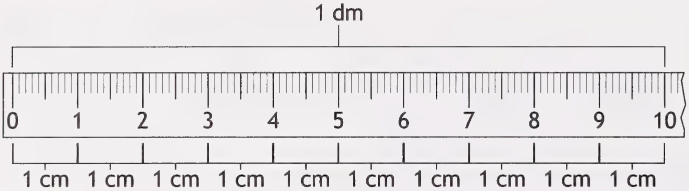
__________ cm

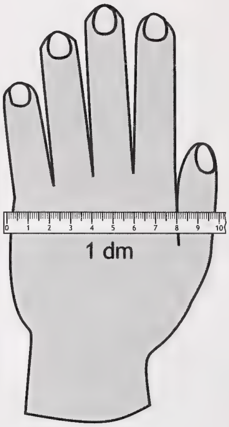
Check your answer in the Appendix.

Did you find that the width of the milk carton or tissue box was close to 10 cm?

Ten centimetres is the same as one **decimetre**.

The widest part of your hand is about 1 dm wide. Put your hand on the 1-dm ruler shown below. How close to 1 dm is the width of your hand?

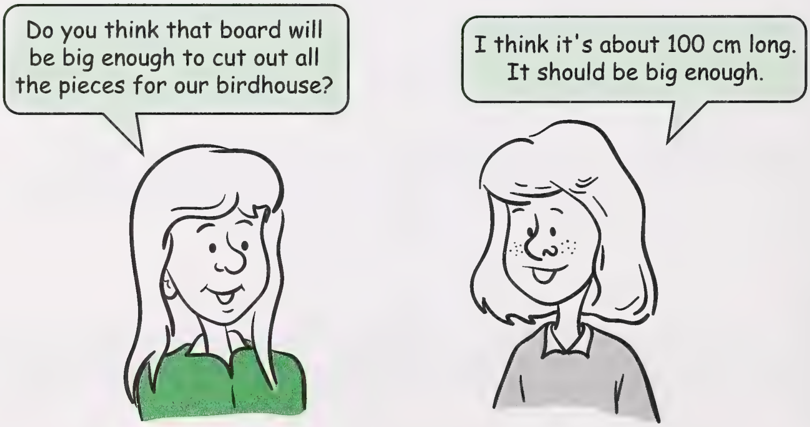

1 dm
0
1
2
3
4
5
6
7
8
9
10
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm


0 1 2 3 4 5 6 7 8 9 10
1 dm

Remember: 1 decimetre = 10 centimetres

1 dm = 10 cm

Estimating


Do you think that board will be big enough to cut out all the pieces for our birdhouse?
I think it's about 100 cm long. It should be big enough.

An **estimate** is a close guess. There are times when you will estimate the height, distance, or width of an object rather than measure it accurately.

Estimating Millimetres

Earlier in this lesson you learned that 1 mm is about the thickness of a dime.

9. Look around your home for **three** objects whose length, width, or thickness is about 1 mm. **Do not measure with your ruler**. Write the names of the objects on the lines below.

- ______________________________
- ______________________________
- ______________________________

10. Now use a ruler to measure the objects that you found.

a. Were all the measurements about 1 mm? ______________

b. Which object was closest to 1 mm? ______________

Check your answers in the Appendix.

Note to the Home Instructor

If the student is having difficulty estimating measurements, it may be necessary to repeat the estimating exercises in this section. The student should be comfortable estimating measurements of 1 mm, 1 cm, 1 dm, and 1 m. Encourage the student to use a ruler or tape measure to help make estimates until he or she is able to make estimates with confidence.

Estimating Centimetres

11. Look around the room for objects whose length, width, or thickness is

- about 1 cm
- more than 1 cm
- less than 1 cm

Hint: One of your fingers measures about 1 cm in width.

a. List the objects you found in the following three boxes.

These three things are about 1 cm:

- ______________________________
- ______________________________
- ______________________________

These three things are **more than** 1 cm:

- ______________________________
- ______________________________
- ______________________________

These three things are **less than** 1 cm:

- ______________________________
- ______________________________
- ______________________________

b. Now use your ruler to check the objects you found. Did you put each object into the correct box?

Have your home instructor help you check your answers.

Estimating Decimetres

One decimetre is the same as 10 cm.

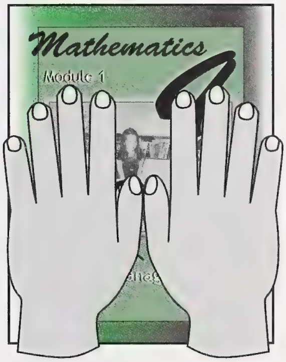
Your hand is about 1 dm wide. When you estimate the length or width of something in decimetres, you may use the width of your hand to help you guess.

12. Estimate the width of your Student Module Booklet by placing your hands across the page.

a. How many times can you place your hands across the page?

____

b. Estimate how many decimetres wide the page is. ________________



13. Search your room or home for **two** objects that measure about 1 dm. **Do not use your ruler to measure**.

- ____
- ____

14. Now use your ruler to measure the two items that you found. Are they about 1 dm in length or width? ___________

Check your answers in the Appendix.

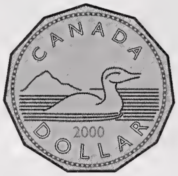
15. Which of the following objects measure **about** 1 cm in length or width? Place an ✗ beside them.

a. the width of a pen __________

b. the width of your fingernail __________

c. the width of your ruler __________

d. the thickness of a loonie coin __________



16. Which of these objects measure **about** 1 mm? Put an ✗ beside them.

a. the thickness of a dime __________

b. the thickness of a sheet of paper __________

c. the thickness of a toothpick __________

d. the thickness of a strand of human hair __________

17. Which of these objects measure **less than** 1 dm? Put an ✗ beside them.

a. an eraser __________

b. the height of a soup can __________

c. the length of a toothpick __________

d. the thickness of your math textbook __________

Chicken
Soup

Check your answers in the Appendix.

Just For Fun

Drawing Stick Figures

For this activity, you will need some drawing paper, a pencil, a 30-cm ruler, and some coloured pencil crayons (or felt markers).

Draw a stick figure using only straight lines and a circle for the head. Use your ruler to make sure each body part has the following measurements:

A torso is the part of the body between the neck and the legs.

Height	2 dm tall
Head	4 cm wide
Neck	1 cm long
Torso	6 cm long
Arms	8 cm long
Fingers	15 mm long
Thumb	10 mm long
Legs	9 cm long
Feet	25 mm long

Once you have drawn your stick figure, use your crayons or felt markers to add details such as the eyes, nose, ears, and mouth.

Hang your stick figure up for the rest of your family to see. See if they can estimate the length of the lines you used for each body part.

Turn to Assignment Booklet 7A, and complete the activities for Day 2.

Day 3

Problem Solving

For many types of problems, people find it helpful to make a drawing of the problem first. Today you will learn about solving problems by drawing a diagram or picture.

Problem-Solving Strategy: Drawing a Diagram

Sometimes you will be asked to solve problems that contain a lot of information. Drawing a diagram helps you see how the information fits together. The diagram does not have to be perfectly accurate, but it should show the information in the problem.

Read the following problem and draw a diagram to help you solve it.

Marco and Merlin carried the groceries into the house from the garage. Marco made 2 trips and Merlin made 3 trips.

If the garage is 10 m from the house, how many metres did they walk altogether?

Follow the steps for problem solving that you have learned in previous lessons.

Step 1: Understand the problem.

Think, "What do I need to find?"

1. In a sentence, tell what you need to find.

____

____

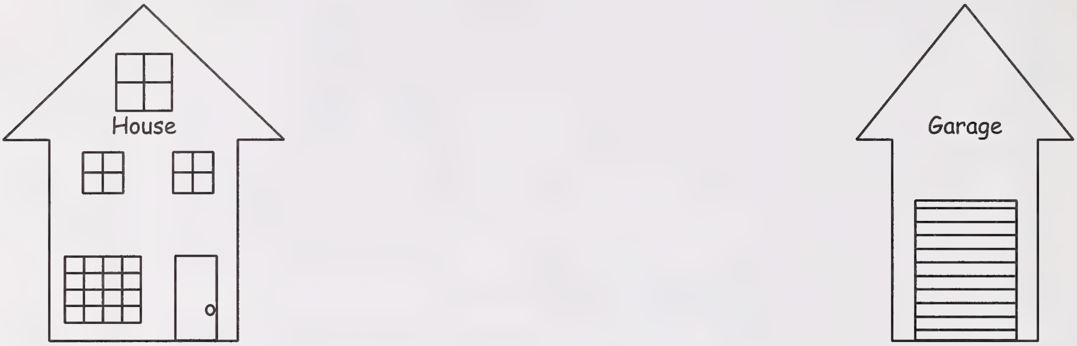
Check your answer in the Appendix.

Step 2: Make a plan. (Choose a strategy.)

Use the Drawing a Diagram strategy.

Step 3: Try the plan.

Drawing a diagram or picture will help you see the total number of times each boy walked from the house to the garage and from the garage to the house. It will help you see the distance walked each time.



2. a. Draw lines on the diagram in red pencil crayon for each trip Marco took. To show where he started, draw a star at the house. Now draw a line from the house to the garage and then back to the house for each trip Marco made.

b. How many trips did Marco make? ____________

c. How many metres equal one trip? (**Remember:** One trip means going from the house to the garage and then back to the house.) ____________

d. In all, how many metres did Marco walk? ____________

Check your answers in the Appendix.

3. **a.** Use a blue pencil crayon to mark the trips taken by Merlin.

   b. How many trips did Merlin take? ____________

   c. How many metres is equal to one trip? ____________

   d. In all, how many metres did Merlin walk? ____________

Check your answers in the Appendix.

4. **a.** Add the distances walked by Marco and Merlin. How many metres in all did they walk to bring in the groceries? ____________

   b. Write your answer in a complete sentence.

ANSWER TO THE PROBLEM

____

____

Step 4: Look Back.

Read the problem again. Ask, "Does the sentence I wrote answer the question being asked in the problem?" Check your drawing and your calculations. Ask, "Does my drawing show all the information from the problem correctly?

Check your answers in the Appendix.

Can you see how drawing a diagram of the grocery problem helped you to understand it better?

Use the Drawing a Diagram strategy to help you find the answer to the following problem.

Kyla and her family were driving to the mountains to go skiing for their winter holiday. They had driven only 100 km when Kyla's younger brother asked how much farther they had to go before they reached the ski resort. Their dad said, "If we go another 150 km, we will be halfway to the ski resort."

What is the total distance from Kyla's home to the ski resort?

Step 1: Understand the problem.

5. What is the problem asking you to find?

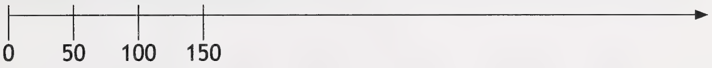
Check your answer in the Appendix.

Step 2: Make a plan.

Try the Drawing a Diagram strategy.

Step 3: Try the plan.

6. **a.** A straight line can be drawn to show the road from Kyla's home to the ski resort. Use a ruler to complete the line that has been started for you. Put marks 1 cm apart along the line. The first marks have been done for you.



   b. The space between the marks is called an interval. Let each interval stand for 50 km. Label the marks beginning at zero (0, 50, 100, 150, 200, and so on).

7. **a.** Make a red mark at **100 km** to show when Kyla's younger brother asked his question.

   b. From this point, go **150 km farther** along the line $(100+150)$. Mark this point with a blue crayon. This shows the halfway point in the journey.

   c. If the blue point on the number line shows half of the distance to the ski resort, what is the total distance to the resort? ________

   d. Write your answer in the box in a complete sentence.

ANSWER TO THE PROBLEM

____

____

Step 4: Look back.

Read the problem again. Ask, "Does the sentence I wrote answer the question being asked?"

Check your diagram. Ask, " Does my diagram correctly show the information given in the problem?"

Check your answers in the Appendix.

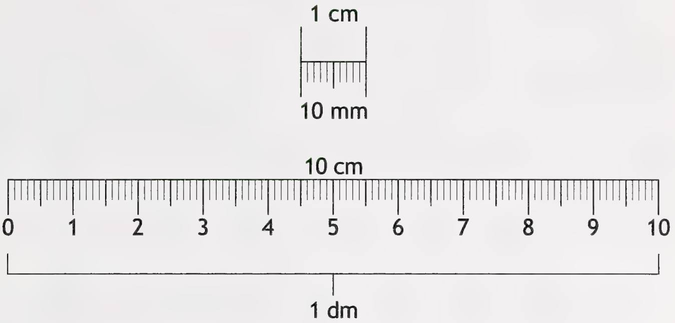
For more practice with solving problems, try out this website:

http://www.mathstories.com

You can choose the grade or difficulty level of many kinds of problems, including measurement problems. **Note:** Units may not always be metric.

Turn to Assignment Booklet 7A, and complete the activities for Day 3.

Comparing and Changing Units



As Jenna and Richelle worked with the centimetre ruler, Richelle soon discovered that distances could be named in different ways. She learned that 10 mm is the same as 1 cm, and 10 cm is the same as 1 dm.

Today's lesson will show how different measuring units can be compared and changed from one unit to another.

How Are Metric Units Related?

How many millimetres are in 5 cm? How many centimetres are in 2 dm? How many millimetres are in 1 dm?

You can answer questions like these by comparing decimetres, centimetres, and millimetres in different ways.

Comparing Millimetres and Centimetres

For this activity, find your base ten blocks. You will need the tens rods and the ones cubes.

Put one cube on the desktop in front of you.

One **cube** stands for 1 mm.

Put one rod on your desktop.

One **rod** stands for 1 cm.

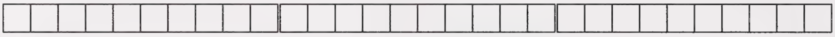
1. Use enough ones cubes to make a rod.

a. How many ones cubes does it take to make a rod? ___________

b. How many millimetres does it take to make a centimetre? ___________

Check your answers in the Appendix.

2. Lay three rods on your desktop end to end.



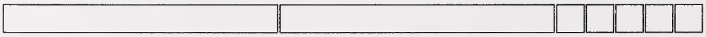
a. Three rods stand for ___________ centimetres.

b. In three rods there are ___________ cubes.

c. In 3 cm there are ___________ mm.

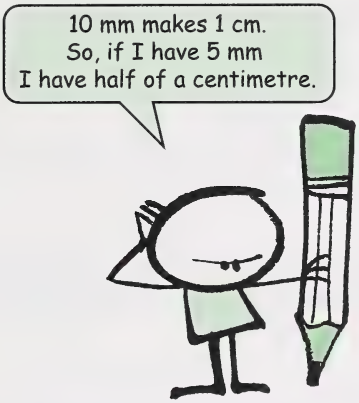
Check your answers in the Appendix.

Now remove one rod and add five unit cubes. You should have two rods and five cubes showing.



Two rods and five cubes can also stand for 2 cm and 5 mm.

This can be written as follows:


10 mm makes 1 cm.
So, if I have 5 mm
I have half of a centimetre.

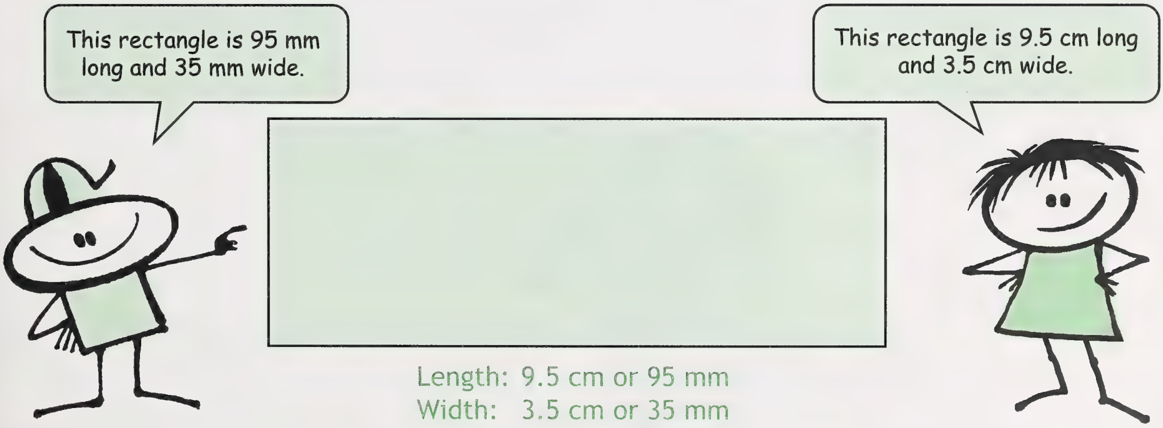
$$\underbrace{2}_{\uparrow}\;\underbrace{.5}_{\uparrow}\text{ cm}$$

This stands for 2 whole cm.

This .5 stands for $\frac{1}{2}$ cm.
5 mm is half of 10 mm.

Writing Measurements Using Centimetres and Millimetres

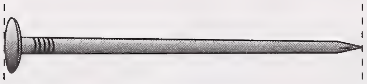
If you measure the length and width of the following rectangle, you may give the measurements in millimetres or in centimetres.


This rectangle is 95 mm long and 35 mm wide.
This rectangle is 9.5 cm long and 3.5 cm wide.

Length: 9.5 cm or 95 mm
Width: 3.5 cm or 35 mm

3. Use your ruler to measure these objects. Give your measurement in **centimetres** and in **millimetres**.

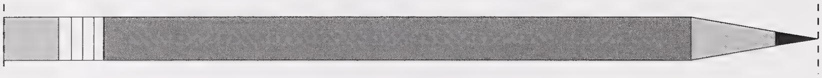
a.



This nail is ____________ mm long.

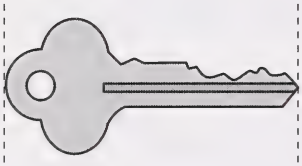
This nail is ____________ cm long.

b.



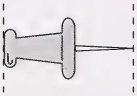
____________ mm ____________ cm

c.



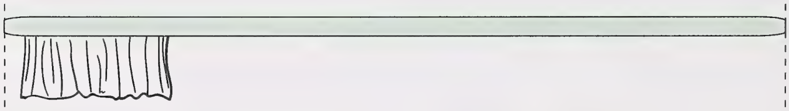
____________ mm ____________ cm

d.



____________ mm ____________ cm

e.

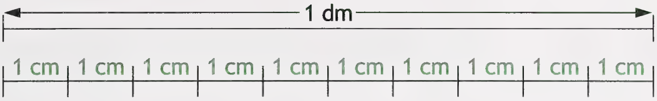


____________ mm ____________ cm

Check your answers in the Appendix.

Comparing Decimetres, Centimetres, and Millimetres

This line is equal to 1 dm.


1 dm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm

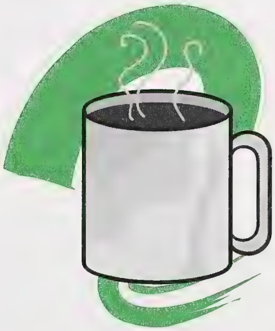
Ten centimetres will fit in 1 dm.

$$10 \text{ cm} = 1 \text{ dm}$$

4. **a.** How many centimetres are in 1 dm?

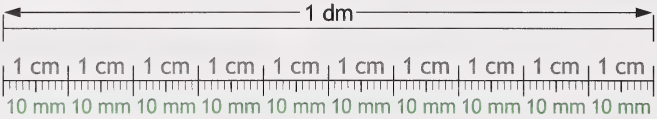
b. If a pencil measures 1 dm in length, how many centimetres long is it?

c. If a mug measures 20 cm in height, how many decimetres high is it?



Check your answers in the Appendix.

You already know that in 1 cm there are 10 mm. This can be shown in the diagram by dividing each centimetre into ten smaller parts.


1 dm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
1 cm
10 mm
10 mm
10 mm
10 mm
10 mm
10 mm
10 mm
10 mm
10 mm
10 mm

5. **a.** If there are 10 mm in 1 cm, how many millimetres are there altogether in 10 cm? Show your calculation.

b. Write your answer in a sentence.

c. Are there 100 mm in a decimetre? Tell how you know.

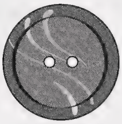
Check your answers in the Appendix.

6. **a.** If a box is 1 dm wide, how many millimetres wide is it? __________

b. How many centimetres wide is it? __________

7. If a button measures 20 mm across, how many centimetres across is it?

____



Check your answers in the Appendix.

8. Circle the measurement in each pair that is larger. Look carefully at the units.

a. 45 mm or 5 cm

b. 12 cm or 13 mm

c. 16 cm or 165 mm

d. 26 mm or 20 cm

e. 8 cm or 183 mm

f. 10 cm or 99 mm

Check your answers in the Appendix.

Turn to Assignment Booklet 7A, and complete the activities for Day 4.

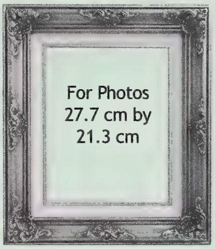
Day 5

Writing Measurements Using Decimals

Measuring to Tenths of a Centimetre

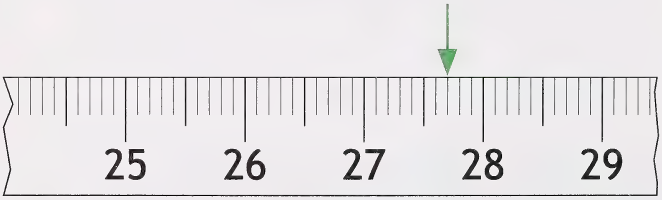
Suppose you need to buy a picture frame for a photo. The photo is 277 mm long and 213 mm wide.

At the store, you find that the measurements for frames are given in centimetres. The frame that you like is for photos 27.7 cm long and 21.3 cm wide.



Is this picture frame long enough for your photo?

To solve the problem, look closely at the enlarged ruler shown below. The arrow shows that the length of the photo is between 27 cm and 28 cm.



Remember that each small tick stands for 1 mm, or $\frac{1}{10}$ of a centimetre. Count the number of millimetres there are past 27 cm. You should find that there are 7.

The arrow shows that the length of the photo is 27 and $\frac{7}{10}$ cm. This amount can also be written as a decimal number: 27.7 cm.

To change centimetres to millimetres, multiply the centimetres by 10.

$1 \text{ cm} = 10 \text{ mm} \quad (1 \text{ cm} \times 10)$
$2 \text{ cm} = 20 \text{ mm} \quad (2 \text{ cm} \times 10)$
$3 \text{ cm} = 30 \text{ mm} \quad (3 \text{ cm} \times 10)$
$10 \text{ cm} = 100 \text{ mm} \quad (10 \text{ cm} \times 10)$

Therefore, to find the number of millimetres in 27 cm, multiply by 10.

$27 \text{ cm} = 270 \text{ mm} \quad (27 \text{ cm} \times 10)$

$$\begin{tikzcd} 27 \text{ and } \frac{7}{10} \text{ cm} \arrow[d] & \text{is the same as} & 270 \text{ mm} + 7 \text{ mm} \arrow[d] \\ 27.7 \text{ cm} & = & 277 \text{ mm} \end{tikzcd}$$

The length of the photo (277 mm) equals the length of the frame (27.7 cm). Therefore, the frame is long enough to hold your photo.

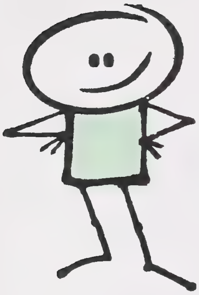
1. The width of your photo is 213 mm. The frame holds photos 21.3 cm wide. Is the frame wide enough for your photo? Explain your thinking.

Check your answer in the Appendix.

Changing Larger Units to Smaller Units

When you change centimetres to millimetres, the decimal point moves one place to the **right**. Remember, a decimal is present at the end of a whole number even when it is not shown. Moving the decimal point one place to the right is the same as multiplying by 10.

cm → mm



$5 \text{ cm} \times 10 = 50 \text{ mm}$

5. 50.

$16 \text{ cm} \times 10 = 160 \text{ mm}$

16. 160.

$22.4 \text{ cm} \times 10 = 224 \text{ mm}$

22.4 224.

2. Change each centimetre measurement to millimetres.

a. 1 cm = __________ mm

b. 8 cm = __________ mm

c. 21 cm = __________ mm

d. 40 cm = __________ mm

e. 15 cm = __________ mm

f. 30.4 cm = __________ mm

g. 19.1 cm = __________ mm

h. 10 cm = __________ mm

i. 46 cm = __________ mm

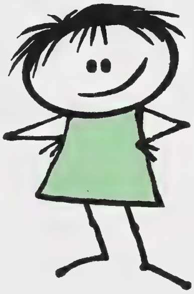
j. 35.5 cm = __________ mm

Check your answers in the Appendix.

Changing Smaller Units to Larger Units

When you change millimetres to centimetres, the decimal moves one place to the **left**. This is the same as dividing by 10.

mm ⟶ cm



30 mm ÷ 10 = 3 cm

30. 3.0

120 mm ÷ 10 = 12 cm

120. 12.0

357 mm ÷ 10 = 35.7 cm

357. 35.7

3. Change each millimetre measurement to centimetres.

a. 10 mm = __________ cm

b. 30 mm = __________ cm

c. 35 mm = __________ cm

d. 42 mm = __________ cm

e. 129 mm = __________ cm

f. 405 mm = __________ cm

g. 19 mm = __________ cm

h. 110 mm = __________ cm

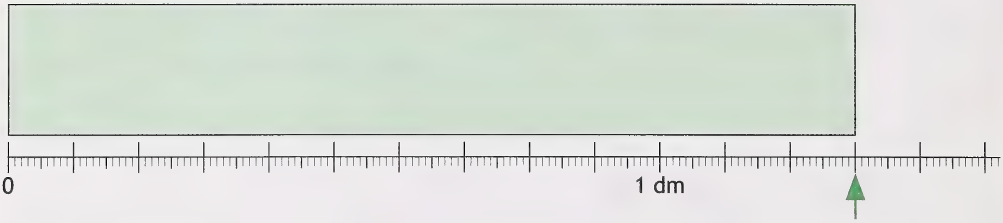
i. 86 mm = __________ cm

j. 355 mm = __________ cm

Check your answers in the Appendix.

Measuring to Tenths of a Decimetre

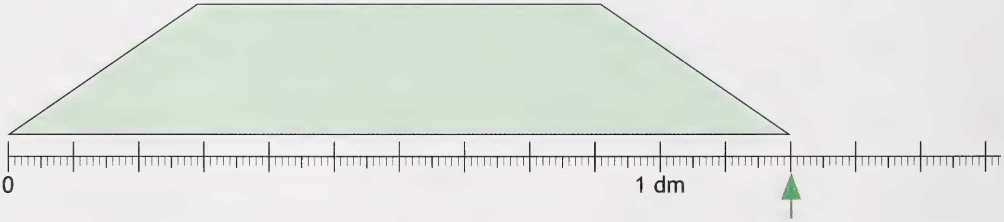
This rectangle measures more than 1 dm but less than 2 dm.



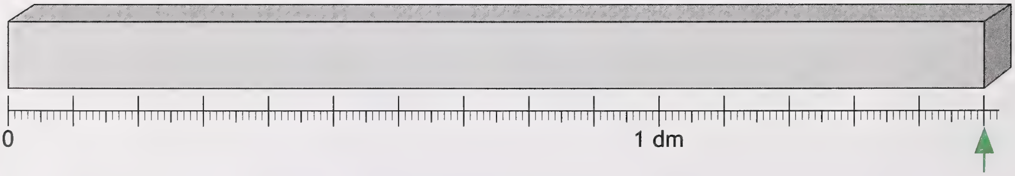
To show an exact measurement, you should write your answer as a decimal number. Remember that there are 10 cm in 1 dm, so each centimetre is $\frac{1}{10}$ of a decimetre. The line measures 1 dm and 3 cm or 1 and $\frac{3}{10}$ dm. This can be written as a decimal number: 1.3 dm.

4. Measure the length of the following figures in decimetres. Write your answers as decimal numbers.

a. __________ dm



b. __________ dm



Check your answers in the Appendix.

Centimetres are changed into decimetres by moving the decimal point one place to the **left**, or by dividing by 10.

Example

$20\text{ cm} \div 10 = 2.0\text{ dm}$

$20.\text{ cm} = 2.0\text{ dm}$

Each centimetre is $\frac{1}{10}$ of 1 dm. This means it takes 10 cm to make 1 dm. If you have 20 cm, then you have 2 dm.

Moving the decimal one place to the left is the same as dividing by 10.

5. Rewrite each measurement in decimetres.

a. 40 cm = __________ dm   **b.** 129 cm = __________ dm

c. 18 cm = __________ dm   **d.** 450 cm = __________ dm

e. 55 cm = __________ dm

Check your answers in the Appendix.

Decimetres are changed to centimetres by moving the decimal point one place to the **right** or by multiplying by 10.

Example

$3.5\text{ dm} \times 10 = 35\text{ cm}$

$3.5\text{ dm} = 35.\text{ cm}$

A decimetre is ten times larger than a centimetre. This means 1 dm is the same as 10 cm. If you have 3.5 dm, then you have 35 cm.

6. Rewrite each measurement in centimetres.

a. 5.7 dm = __________ cm

b. 63 dm = __________ cm

c. 18 dm = __________ cm

d. 31.4 dm = __________ cm

e. 12.1 dm = __________ cm

Check your answers in the Appendix.

Changing from one metric unit to another can sometimes get confusing. Here's a helpful hint to remember for questions that ask you to change the units.

As you do each question, ask yourself, "Will the new unit make the number bigger or smaller?"

If you change from millimetres to centimetres, the unit gets bigger so the number gets smaller.

Unit gets bigger

$$\text{mm} \xrightarrow{\hspace{3em}} \text{cm}$$

30 mm 3 cm

Number gets smaller

The rule works in reverse if the new unit is smaller. If you change centimetres to millimetres, the new unit is smaller so the number gets bigger.

Unit gets smaller

$$\text{cm} \xrightarrow{\hspace{3em}} \text{mm}$$

3 cm 30 mm

Number gets bigger

7. For each of the following, tell whether **both** sentences in each question make sense. Circle **Yes** or **No**.

a. My pencil is 185 mm long.
My pencil is 18.5 cm long. Yes No

b. The broom handle is 110 cm long.
The broom handle is 11 dm long. Yes No

c. The screwdriver is 150 dm long.
The screwdriver is 15 cm long. Yes No

d. The table is 90 cm wide.
The table is 9 mm wide. Yes No

e. Janis is 16 dm tall.
Janis is 160 cm tall. Yes No

8. Choose one pair of sentences from question 7 for which you circled **No**. Tell why the pair of sentences doesn't make sense.

Check your answers in the Appendix.

9. Look at each pair of measurements. Circle the measurement that is **larger**. Be sure to look carefully at the units.

a. 15 cm or 12 dm

b. 232 mm or 23.1 cm

c. 6.4 dm or 63 cm

d. 10.1 cm or 99 mm

e. 37 cm or 3.5 dm

f. 11 mm or 1.2 cm

g. 8.8 cm or 8 dm

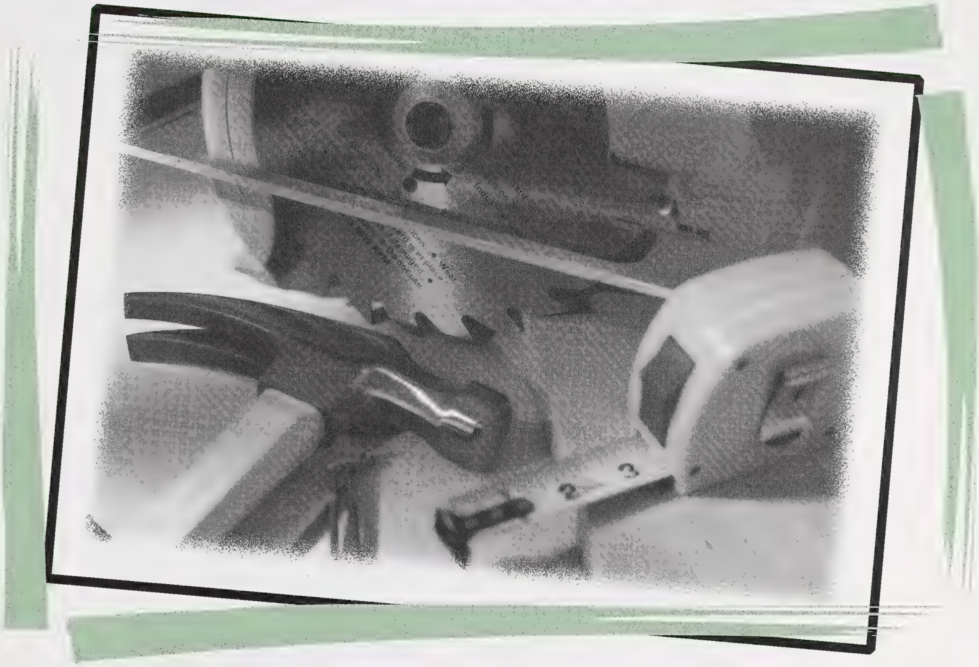
Check your answers in the Appendix.

For more practice with measuring in centimetres and millimetres, visit this website:

http://www.funbrain.com/measure/index.html

Turn to Assignment Booklet 7A, and complete the activities for Day 5.

Exploring Metres



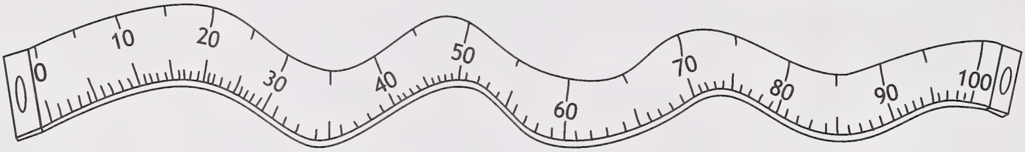
In Days 4 and 5 you saw how measurements can be changed from one metric unit to another. For example, if a shelf is 22 cm wide, its width can also be written as 220 mm.

Today you will learn more about metres. Metres are used to measure large objects.

You will practise measuring and estimating using metres. You will also compare and change metres to other units.

How Long Is a Metre?

For this activity, you need a metre-stick or a measuring tape that is 1 m long. If you don't have a metre-stick or a measuring tape, go to Day 6 of the Cut-Out Learning Aids section in the Appendix. Cut out the four pieces for the paper metre-stick and tape them together. If you need to, get help from your home instructor.



Hold your metre-stick or measuring tape along the edge of your table or on the floor. This distance is equal to 1 m.

Look at the divisions on the measuring tape.

1. How many centimetres are in 1 m? ____________

Use your measuring tape or metre-stick to find things in your house that are close to 1 m in length or width.

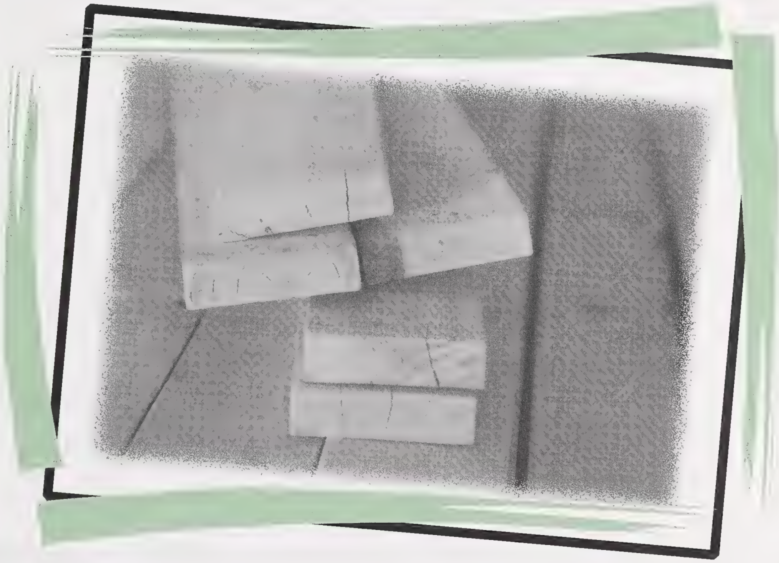
2. List **five** things you measured that are about 1 m in length.

- ____________________________
- ____________________________
- ____________________________
- ____________________________
- ____________________________

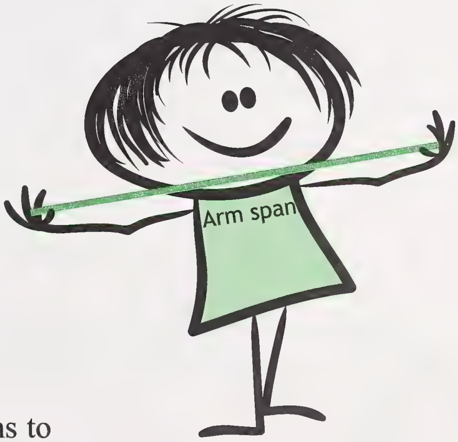
Check your answers in the Appendix.

Estimating Metres

Suppose you were asked to find a piece of lumber in a carpenter's shop that is 1 m in length. You have no measuring tape, so you must **estimate** to locate the board. Could you find the board?



Here's a method that might help you estimate a length or distance of 1 m. Hold your arms out straight on either side of your body. Ask someone to hold up the measuring tape or metre-stick to measure your arm span.



- Is your arm span close to 1 m?
- Is it slightly more than 1 m?
- Could you use your outstretched arms to estimate about how wide something is in metres?

3. Look around your home for objects with lengths or widths that are about 1 m, more than 1 m, and less than 1 m.

a. List the objects in the correct boxes. Remember, you can use your arm span to help you estimate 1 m.

These three things are about 1 m:

- ____________________________
- ____________________________
- ____________________________

These three things are **more than** 1 m:

- ____________________________
- ____________________________
- ____________________________

These three things are **less than** 1 m:

- ____________________________
- ____________________________
- ____________________________

b. Now use your tape measure or metre-stick to check the length of the objects you found. Did you put each object into the correct box?

____

Ask your home instructor to help you check your measurements.

4. **a.** Choose a very large object in your house or yard. The object should be as long as a car or longer. Estimate the length. Then measure to find the actual measurement in metres.

Object	Estimated Length	Actual Length
________	________ m	________ m

b. Tell what method you used to estimate the length of the object in question 4.a.

____

____

____

____

____

c. What measuring tool did you use to measure the actual length?

____

d. How hard or easy was it to measure using this tool? Explain.

____

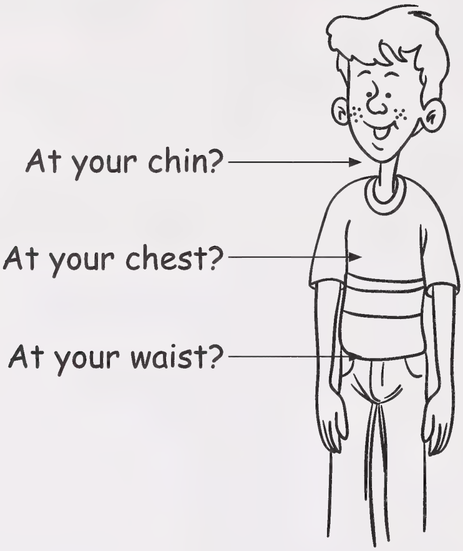
____

____

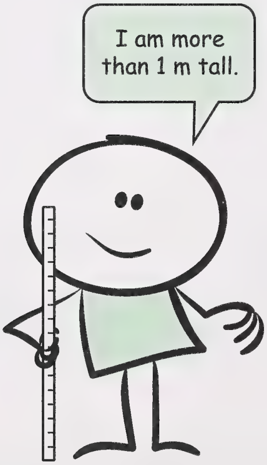
Check your answers in the Appendix.

It is also useful to be able to estimate **height** in metres.

Find your metre-stick or measuring tape. Hold it vertically in front of you so that one end touches the floor. Where is the 1-m mark on your body?


At your chin?
At your chest?
At your waist?

If you know about where the 1-m mark is on your body, you can estimate the height of objects more accurately.


I am more than 1 m tall.

5. Look around your house or your yard. Find **five** objects that you estimate are 1 m tall. Use the 1-m mark on your body to help you estimate.

- List the five objects below.
- Then measure each object with a metre-stick.
- Tell whether the object is exactly 1 m, less than 1 m, or more than 1 m tall.

Objects	Measurement	= 1, < 1 m, > 1 m

6. Complete each sentence by writing an estimate.

a. A hockey net is about __________ m high.

b. The front door of your house is about __________ tall.

c. The stove in most kitchens is about __________ high.

d. Your bedroom door is about __________ wide.

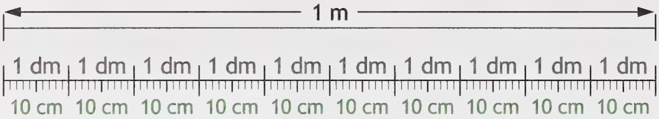
e. The length of a snowmobile is about __________.

Check your answers in the Appendix.

Comparing Metres, Decimetres, and Centimetres

So far you have compared decimetres, centimetres, and millimetres. You can also compare metres to decimetres and centimetres. Look at the following diagram.

Imagine that this line is 1 m long.


1 m
1 dm
1 dm
1 dm
1 dm
1 dm
1 dm
1 dm
1 dm
1 dm
1 dm
10 cm
10 cm
10 cm
10 cm
10 cm
10 cm
10 cm
10 cm
10 cm
10 cm

7. Count the number of decimetres that equal the length of 1 m. Fill in the box.

__________ dm = 1 m

8. If a table measures 1 m in height, how many decimetres high is it?

____

9. If a shed measures 30 dm in width, how many metres wide is it?

____

Check your answers in the Appendix.

Look back at the diagram shown above. You can see that in each decimetre section there are 10 cm.

1 dm = 10 cm

10. a. How many centimetres are there in 10 dm? Show your calculation.

b. Write your answer in a sentence.

____

____

c. How many centimetres are there in 1 m? Tell how you know.

____

____

11. If a desk measures 1 m in length, how many centimetres long is it?

____

12. An antelope can leap 900 cm. How many metres can it leap? __________

13. Complete the following table.

Metres	1	2	3	4	7	9	10	12	15
Centimetres	100	200							

Check your answers in the Appendix.

Turn to Assignment Booklet 7A, and complete the activities for Day 6.

Metres and Kilometres

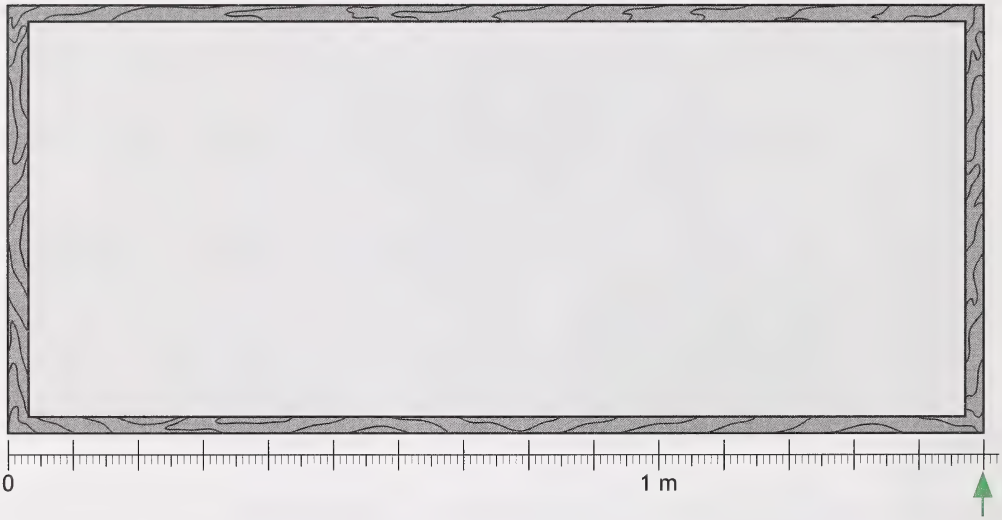
Measuring to Tenths of a Metre

For the following activity you will need a metre-stick or a tape measure.

To make accurate measurements of objects, you sometimes need to use decimal numbers. If an object measures more than 1 m but less than 2 m, you need to show the exact measurement as a decimal number.

Example

This window measures 1 m + 5 dm. The measurement is written **1.5 m**.



Remember that there are 10 dm in 1 m. This means that each decimetre is 0.1 m or $\frac{1}{10}$ of a metre. The window is 5 dm longer than a metre. This is the same as 0.5 m or $\frac{5}{10}$ of a metre. Therefore, the window is 1.5 m long.

1. Use your metre-stick or tape measure to measure the following objects in your home. Write your answers as decimal numbers to the nearest tenth of a metre (for example, 3.6 m or 2.8 m).

   a. the length of your desk: __________ m

   b. the height of your refrigerator: __________ m

   c. the distance from your TV to your sofa: __________ m

Have your home instructor help you check your answers.

2. Write the measurement of each item in question 1 in decimetres and in centimetres. Use decimal numbers to show your answers if necessary.

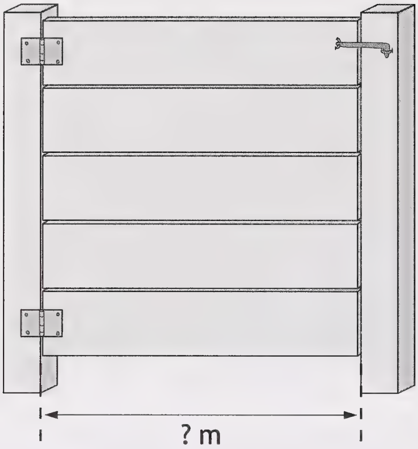
   a. length of your desk: ________ dm ________ cm

   b. height of your refrigerator: ________ dm ________ cm

   c. the distance from your TV to your sofa: ________ dm ________ cm

Have your home instructor help you check your answers.

This gate is 18 dm wide.



3. Write the width of the gate in metres. __________

Check your answers in the Appendix.

4. Look at these pairs of measurements. Circle each pair that gives two measurements that are the same length.

a. 5.7 cm and 57 mm

b. 1.2 m and 12 cm

c. 25 dm and 2.5 m

d. 360 mm and 36 cm

e. 6.8 m and 68 cm

f. 9.2 m and 92 dm

g. 16.9 dm and 169 cm

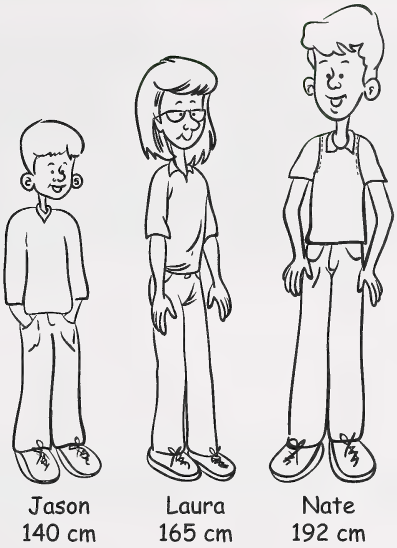
h. 20 cm and 2 m

i. 4 m and 400 cm

j. 34 cm and 3.4 dm

Check your answers in the Appendix.

Measuring Heights



Jason is 140 cm tall. You could also say that Jason is 1 m and 40 cm or 1.40 m tall.

$$140 \text{ cm} = 1.40 \text{ m}$$

Laura is 165 cm or 1.65 m tall.

$$165 \text{ cm} = 1.65 \text{ m}$$

Nate is 192 cm or 1.92 m tall.

$$192 \text{ cm} = 1.92 \text{ m}$$

Can you see how the decimal moves when you change from centimetres to metres? When you change from centimetres to metres, the decimal moves **two** places to the left. This is the same as dividing by 100.

cm → m

$$\underset{\curvearrowleft\curvearrowleft}{192} \div 100 = 1.\underset{\curvearrowleft\curvearrowleft}{92}$$

5. Change each measurement to metres.

a. 185 cm = __________ m

b. 210 cm = __________ m

c. 142 cm = __________ m

d. 176 cm = __________ m

e. 338 cm = __________ m

Check your answers in the Appendix.

6. Ask your home instructor to help you measure your height as you stand with your back against a wall.

a. First record your height in centimetres.

My height in centimetres: __________ cm

b. Then move the decimal two places to the left to find your height in metres.

My height in metres: __________ m

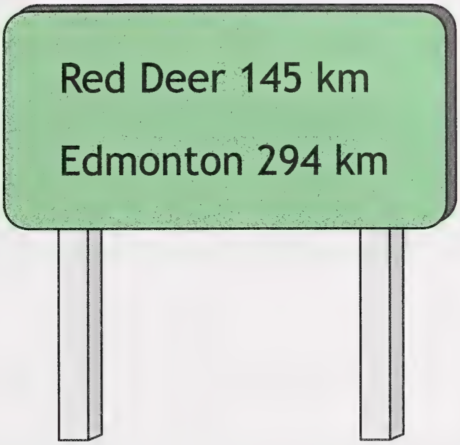
Check your answers in the Appendix.

Exploring Kilometres

The largest unit used for measuring length is the kilometre.

Kilo means 1000. A **kilometre** is used to describe a distance of 1000 m.

The abbreviation for kilometre is **km**. You have probably seen road signs that use this abbreviation.



Can you imagine how far 1 km is? How long would it take you to walk 1 km?

Most people can walk 1 km in about 15 minutes.

7. If you can walk 1 km in 15 minutes, how long would it take you to walk 4 km? Show your calculation.

Check your answer in the Appendix.

Kilometres are used to measure long distances like the following:

- distance from Ken's house to the library: about 3 km
- distance from Edmonton to Calgary: about 300 km
- distance from Calgary to Disneyland: about 3000 km
- distance from Edmonton to the moon: about 380 000 km

1 km = 1000 m

8. Fill in the table.

Kilometres	1	2	5	9	10
Metres	1000				

9. Tell whether each distance is about 1 km, more than 1 km, or less than 1 km

a. the distance from your home to the nearest grocery store

____

b. the distance from your home to your nearest neighbour's home

____

c. the distance from your home to the closest town or city

____

d. the distance from your home to the nearest park or playground

____

Check your answers in the Appendix.

Choosing the Best Unit

Before you begin a measuring task, it is important to decide which is the best measurement unit to use.

Which measurement should you use? You have several units to choose from:

- **millimetres**
- **centimetres**
- **decimetres**
- **metres**
- **kilometres**

The longer an object is, the larger the unit of measurement should be.

To measure large objects or long distances, use metres or kilometres.

To measure small objects or short distances, use decimetres, centimetres, or millimetres.

If you try to measure a large object with small units of measurement, you could have difficulties.

10. Imagine trying to measure the length and width of your bedroom floor using millimetres! Tell what kind of problems you might have.

11. Tell why using kilometres to measure the length of a kitchen table would not work well.

____

____

Check your answers in the Appendix.

12. Choose the best unit for each of the following situations.

a. If you want to measure the distance across your fingernail, would you use millimetres or metres?

____

b. If you want to measure the length of a wall, would you use centimetres or kilometres?

____

c. You are looking at a map to see how far it is from Calgary to Vancouver. Is this information in metres or kilometres?

____

13. Which would be the best unit to measure each of the following?

a. the length of a soccer field ______________________________

b. the length of a person's arm ______________________________

c. the distance walked in a day ______________________________

d. the width of a dime ______________________________

e. the distance you can jump ______________________________

Check your answers in the Appendix.

Just For Fun

How Much Toothpaste Do You Use?

1. Draw the amount of toothpaste you use each time you brush your teeth.

2. Use a ruler to measure the length of the toothpaste you drew in question 1.

   ________ cm

3. Calculate how much toothpaste you use in **one day**.

4. Calculate how much toothpaste you use in **one week**.

5. Calculate how much toothpaste you use in **one year**.

Turn to Assignment Booklet 7A, and complete the activities for Day 7.

Graphing and Measuring

In Module 1: Data Management you collected information about many topics. You recorded this information in charts and lists. Then you created different kinds of graphs for sharing your information with others.

Today you will do some measuring activities to collect **data**. You will then use this data to create a graph to share your information.

Many kinds of measuring tools can help you collect data.

1. Name some measuring tools with which you are familiar. Include tools that are used to measure length, distance, capacity, time, or mass.

______________________ ______________________

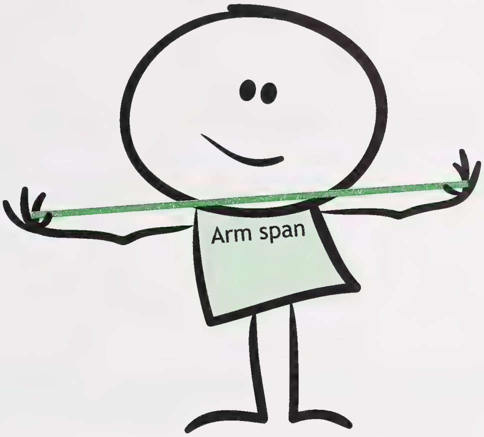
______________________ ______________________

______________________ ______________________

Check your answers in the Appendix.

Measuring Arm Span

Arm span is the distance measured from fingertip to fingertip when a person stands with his or her arms spread.



For this activity, you will need a strong string that will not stretch or break.

2. Have a friend or family member hold a string stretched between his or her spread arms. Mark the string to show the distance. Then use the measuring tape or metre-stick to measure how long the arm span is in centimetres. Record the information on the data chart.

   Measure six people including yourself. (You will need help to measure your own arm span.)

Person Measured	Arm Span (in centimetres)

Turn to Day 8 of the Cut-Out Learning Aids section in the Appendix. Use the graph form found there to construct a bar graph that shows the arm span of six people.

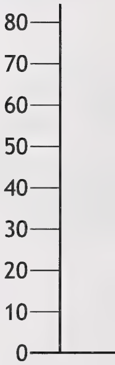
3. **a.** What interval will you use along the vertical axis?

b. Why is an interval of 100 not a good choice?

Check your answers in the Appendix.

Use your interval to fill in the numbers along the vertical axis.

Some of the numbers in your data may not match your intervals. For example, if you chose an interval of 10, all numbers along the vertical axis will end in zero. You will have to estimate where on the axis numbers such as 148 or 157 will be.



4. If one of the measurements in your data is 115 cm, how tall will you make that bar? What ticks on the vertical axis would you use to help you decide?

Check your answers in the Appendix.

5. Continue your bar graph by drawing the bars for each person you measured. If your numbers do not match the interval numbers, **estimate** where you think the top of each bar would be. Remember to add labels and a title and then colour the bars.

6. What conclusions can you make about the arm span of the people shown in the graph? (For example, do taller people have larger arm spans? Does your arm span get bigger as you get older? Do girls and boys who are the same age have similar arm spans?) Write several statements that are true based on the information in your graph.

Check your answers in the Appendix.

When you have finished your bar graph, share it with your home instructor.

Basic Number Facts Practice

Before you begin your Assignment Booklet activity for today, you will practise some basic addition and subtraction number facts.

Ask your home instructor to time you as you complete the following exercises. Your goal is to complete all 25 questions in each exercise in 2 minutes. At the end of 2 minutes, count up how many questions you were able to complete. Write this number in the chart below. Then use the answer key in the Appendix to mark the exercise, and record your score in the space provided. Before you move on, go back and complete any questions you did not finish during the 2 minutes. Mark these questions using the answer key as well.

Basic Number Facts Practice

Addition Number Facts

Number Completed in 2 Minutes ______

Number Correct in 2 Minutes ______

Subtraction Number Facts

Number Completed in 2 Minutes ______

Number Correct in 2 Minutes ______

Record your score on the Number Facts Progress Chart.

7. Addition Number Facts
Timed Exercise: 2 minutes

$\begin{array}{r} 9 \\ +\ 3 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ +\ 9 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ +\ 7 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ +\ 6 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ +\ 6 \\ \hline \end{array}$

$9 + 4 =$ $7 + 4 =$ $8 + 4 =$ $6 + 7 =$ $9 + 5 =$

$\begin{array}{r} 3 \\ +\ 8 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ +\ 7 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ +\ 9 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ +\ 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ +\ 7 \\ \hline \end{array}$

$6 + 5 =$ $4 + 9 =$ $7 + 5 =$ $2 + 9 =$ $6 + 8 =$

$\begin{array}{r} 8 \\ +\ 5 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ +\ 9 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ +\ 8 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ +\ 9 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ +\ 9 \\ \hline \end{array}$

Check your answers in the Appendix.

STOP

8. Subtraction Number Facts
Timed Exercise: 2 minutes

18 – 9 = **16 – 7 =** **13 – 5 =** **15 – 7 =** **12 – 6 =**

$$\begin{array}{ccccc} \begin{array}{r} 14 \\ -\ \ 8 \\ \hline \end{array} & \begin{array}{r} 16 \\ -\ \ 9 \\ \hline \end{array} & \begin{array}{r} 17 \\ -\ \ 8 \\ \hline \end{array} & \begin{array}{r} 12 \\ -\ \ 7 \\ \hline \end{array} & \begin{array}{r} 15 \\ -\ \ 8 \\ \hline \end{array} \end{array}$$

11 – 7 = **14 – 7 =** **16 – 8 =** **12 – 4 =** **11 – 8 =**

$$\begin{array}{ccccc} \begin{array}{r} 13 \\ -\ \ 6 \\ \hline \end{array} & \begin{array}{r} 15 \\ -\ \ 6 \\ \hline \end{array} & \begin{array}{r} 11 \\ -\ \ 6 \\ \hline \end{array} & \begin{array}{r} 14 \\ -\ \ 6 \\ \hline \end{array} & \begin{array}{r} 12 \\ -\ \ 5 \\ \hline \end{array} \end{array}$$

15 – 9 = **12 – 3 =** **13 – 7 =** **11 – 9 =** **14 – 9 =**

Check your answers in the Appendix.

Turn to Assignment Booklet 7A, and complete the activities for Day 8.

Putting It All Together (I)

In Section 1 you have learned how to measure length and distance. You practised many measurement skills:

- using different measuring tools
- measuring length, width, and height of objects
- estimating length, width, height, and distance
- comparing length, width, height, and distance
- understanding units of measurement such as millimetres, centimetres, decimetres, metres, and kilometres
- choosing the best unit to measure an object or distance
- comparing and changing units of measurement

Today you will show what you have learned about measuring by completing several review questions. You will then work on a Challenge Activity related to measurement.

Part 1: Reviewing the Concepts

For Part 1 you will complete **all** of the review questions for Day 9 in Assignment Booklet 7A. First you may wish to look back through the Student Module Booklet to review the concepts that have been covered.

Part 2: Challenge Activities

The Challenge Activities in Part 2 are designed to extend and explore ideas about measurement. In Assignment Booklet 7A you will find two Challenge Activities. Choose **either** Activity A **or** Activity B (**or** you may do both if you wish).

Turn to Day 9 in Assignment Booklet 7A, and complete all of the review questions in Part 1. Then do one or both of the Challenge Activities in Part 2.

Assessing What You Know (I)

This is the last day you will be working on Section 1: Measuring Length and Distance. You are to complete **two** activities in Assignment Booklet 7A:

- Showing What You Can Do
- Basic Number Facts

Read the explanation of the activities in Parts 1 and 2 before turning to Assignment Booklet 7A. Note that you will need the help of your home instructor for both activities.

Part 1: Showing What You Can Do

For this activity you will need the help of your home instructor. You will be working on a short activity while your home instructor observes you. As you work through the problem, try to explain clearly what you are doing.

Your home instructor may ask you questions like the following:

- "How do you know that?"
- "Why did you decide to do that?"
- "How did you get that answer?"

Note to the Home Instructor

This performance assessment should take about 20 minutes. The Home Instructor's Assessment Page and accompanying Student's Assessment Page can be found in Day 10 of Assignment Booklet 7A. Remove both pages from the Assignment Booklet. Read over the student's page so you are familiar with the student's assigned task. You should also preview the interview questions and the checklist before the student begins working on the assigned task.

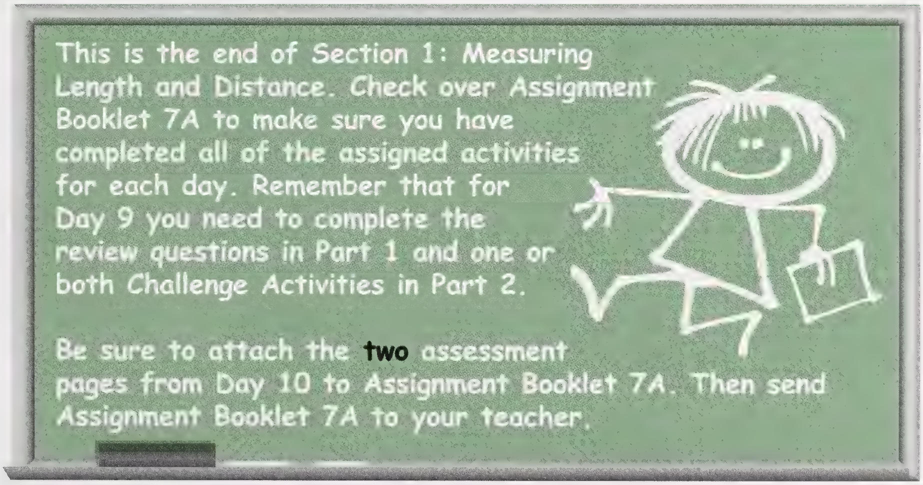
As the student works to answer the questions, encourage him or her to talk about what he or she is doing. **Allow the student to use any manipulatives or cut-out learning aids available to help solve the problem**. You may or may not wish to use some of the interview questions. Look for understanding and the student's ability to explain clearly what he or she is doing to arrive at an answer. Indicate on the checklist whether you feel the student demonstrated the skills being assessed.

Attach both assessment pages to Assignment Booklet 7A before sending it in for marking.

Part 2: Basic Number Facts

In this activity you will show how well you are learning the basic number facts for multiplication and division. Your home instructor will time you as you do each test.

When your home instructor is ready, turn to Assignment Booklet 7A and complete the activities found in Parts 1 and 2 of Day 10.

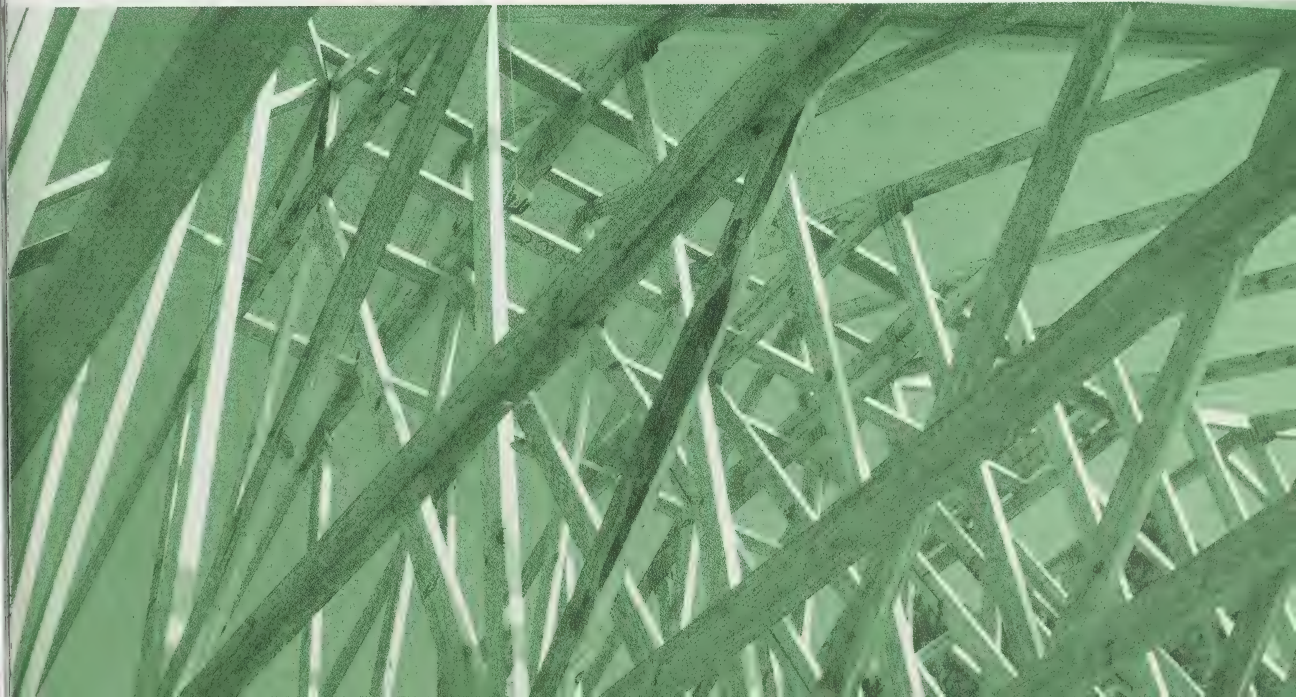


This is the end of Section 1: Measuring Length and Distance. Check over Assignment Booklet 7A to make sure you have completed all of the assigned activities for each day. Remember that for Day 9 you need to complete the review questions in Part 1 and one or both Challenge Activities in Part 2.

Be sure to attach the **two** assessment pages from Day 10 to Assignment Booklet 7A. Then send Assignment Booklet 7A to your teacher.

Section 2

Understanding Perimeter and Area



Day 11

What Is Perimeter?

Perimeter is the distance around the outside of a shape or figure.

Knowing the distance around an object can be very helpful:

- A homeowner can figure out how many boards it will take to build a fence around a yard.
- A shopkeeper can figure out how much string will be needed to tie a package.

For the next few days, you will learn how to measure the perimeter of different shapes. You will also learn why it is useful to know about perimeter.

Measuring Perimeter

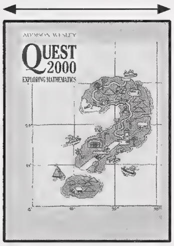
Look at the cover of your textbook.

1. **a.** What unit of measurement would you use to measure the width and length of the cover?

   The best unit is ____.

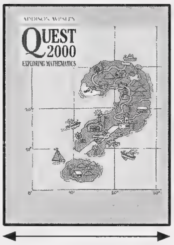
   b. What is the distance in centimetres across the top of the book?

   ___________ cm


ADDISON WESLEY
QUEST 2000
EXPLORING MATHEMATICS

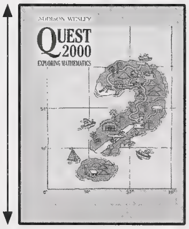
   c. How wide in centimetres is the cover across the bottom?

   ___________ cm


ADDISON WESLEY
QUEST 2000
EXPLORING MATHEMATICS

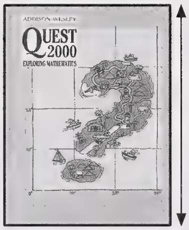
   d. What is the distance down the left side of the cover?

   ___________ cm


ADDISON WESLEY
QUEST 2000
EXPLORING MATHEMATICS

e. What is the distance down the right side of the cover?

________ cm

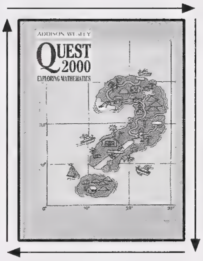

ADDISON-WESLEY
QUEST 2000
EXPLORING MATHEMATICS

f. Add together all the measurements of the cover of the book.

________ + ________ + ________ + ________ = ________

The total distance around the book cover is ________ cm.

The total distance around the outside of the book cover is called the perimeter.


ADDISON-WESLEY
QUEST 2000
EXPLORING MATHEMATICS

g. The perimeter of the book is ________ cm.

Check your answers in the Appendix.

Perimeter is the total distance around the outside of a figure or shape.

All figures or shapes have perimeter. To find the perimeter of a figure, measure each side and then add the measurements of the sides together.

Squares and Rectangles

The shape of the cover of your textbook is a rectangle. The width across the top and bottom are equal. The two sides are also the same length as each other.

2. Can you think of a shortcut to find the perimeter of a rectangle so that you do not have to measure all four sides to find its perimeter?

I can find the perimeter of a rectangle by . . .

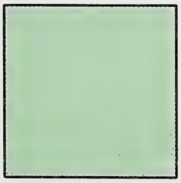
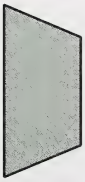
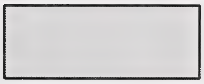
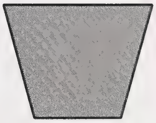
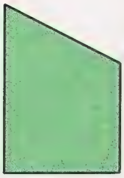
____

____

Check your answer in the Appendix.

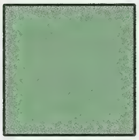
3. You can use the shortcut to find the perimeter of some of the following shapes.

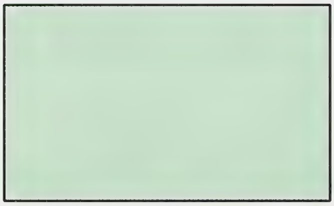
a. Circle the shapes on which you can use the shortcut for finding perimeter.

b. Explain why you could **not** use the shortcut to find the perimeters of some of these figures.

4. Use your ruler to measure the sides of each of these figures in centimetres. Then calculate the perimeter of each figure. Remember to include **cm** in your answer.

a.  Perimeter = __________

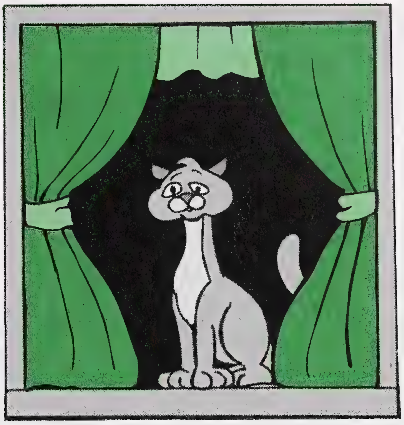
b.  Perimeter = __________

Check your answers in the Appendix.

5. Can you think of a shortcut for finding the perimeter of a square?

Check your answer in the Appendix.

Measuring Perimeter in Your Home



To calculate how much wood trim you need to go around the windows in your home, you need to measure the perimeter of each window and then add the totals.

6. Use a tape measure or metre-stick to measure three different windows in your home. You may need help from your home instructor. Record your answers in the chart. Use a calculator if you wish.

	Length of Sides in Centimetres	Perimeter in Centimeters
Window 1	_____ cm + _____ cm + _____ cm + _____ cm	
Window 2	_____ cm + _____ cm + _____ cm + _____ cm	
Window 3	_____ cm + _____ cm + _____ cm + _____ cm	
	Total trim needed =	_________ cm

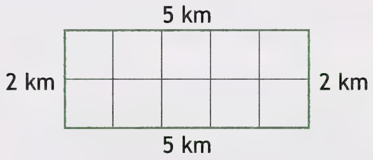
Check your answers in the Appendix.

Using Grid paper

It is sometimes helpful to draw a diagram to help calculate the perimeter of a figure. Grid paper makes it easier to draw a diagram. The squares on the grid paper can represent any unit you choose.

Example

A farmer wants to fence a section of his property in a rectangular shape that is 5 km on one side and 2 km on the other side. In order to calculate how much fencing he needs, he drew the following diagram. How much fencing does the farmer need?



The farmer drew a rectangle that is 5 units long and 2 units wide. Each unit stands for 1 km. By looking at the diagram, it is easy to see that the perimeter is $5+2+5+2=14$ km.

The farmer needs 14 km of fencing.

Turn to the Cut-Out Learning Aids section of the Appendix and remove the sheet of grid paper for Day 11. Use the grid paper to answer question 7. The side of each square stands for 1 m.

7. Desmond's bedroom is shaped like a rectangle. One wall is 5 m long. The other wall is 4 m long.

Use the grid paper to draw the outline of the room. Use your sketch to help calculate the perimeter of the bedroom.

Perimeter: ___________

Can you change the length of the walls and still have a perimeter of 18 m? For example, instead of a floor that is 5 m by 4 m, could you make a room that is 6 m by 3 m?

8. Use the grid paper to draw a new floor plan showing a room that is 6 m by 3 m. Calculate the perimeter.

Perimeter: ___________

9. Use the grid paper to draw **two** more floor plans with a perimeter of 18 m.

10. Do you think all of the floor plans you drew would be good to use for a bedroom? Tell why or why not.

____

____

____

____

Check your answers in the Appendix.

Turn to Assignment Booklet 7B, and complete the activities for Day 11.

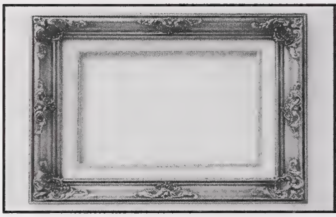
Day 12

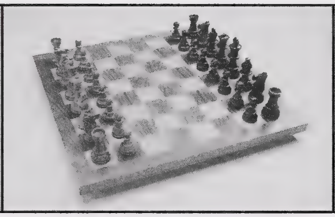
𝍸 𝍸 ||

Estimating and Comparing Perimeters

It is useful to be able to estimate the perimeter of a figure or object. Sometimes you may not have a measuring tool, or the objects you are comparing may be too large to measure with the tool you have. In these cases you would need to guess or **estimate** the perimeters of the figures.

You have already practised estimating length and distance. Now you will use these skills to estimate the total distance around a figure.





1. Look around the room you are in. Find **two** objects that are rectangular in shape. One object should be larger than the other.

   a. Write the name of each object in the table.

Object	Estimate of Perimeter	Actual Perimeter

   b. Estimate the perimeter of each object. Record your estimates in the table. Use millimetres or centimetres.

   Which object do you think has the greater perimeter?

   ____

c. Use a ruler to measure the actual perimeter of each object. Use the same units as you did for your estimates. Record the measurements in the table.

d. Compare the estimates you wrote in the table with the actual measurements. Were your estimates close to the actual measurements?

____

e. Were you able to tell by estimating which object had the larger perimeter? Explain how.

____

____

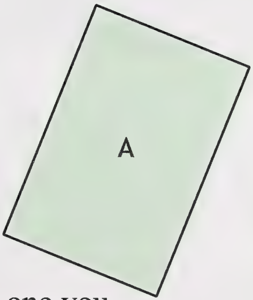
____

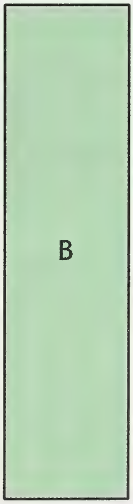
____

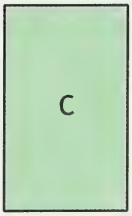
Check your answers in the Appendix.

2. Look at figures A, B, and C.

Estimate which one has the longest perimeter and which has the shortest perimeter.







a. Write the letter of the one you think has the **longest** perimeter.

____

b. Write the letter of the one you think has the **shortest** perimeter.

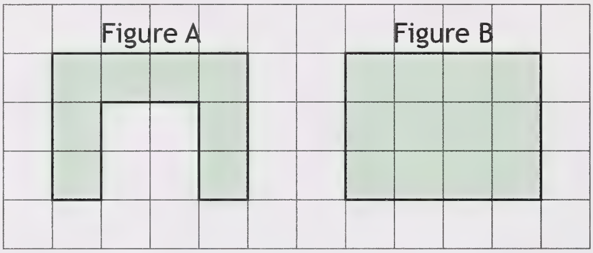
____

Check your answers in the Appendix.

Sometimes it is more difficult to estimate perimeter when the figures are not regular four-sided shapes.

Example

Look at the following pair of figures. Without measuring or counting, **estimate** which figure has the greatest perimeter. Draw a circle around the figure that you think has the greatest perimeter.



Because the figures appear to be about the same size, you might think they have the same perimeter. However, Figure A has more distance around the outside. To check, count the number of units around the outside edge of each figure.

Another way to help you estimate is to ask yourself which figure would take more fencing to completely enclose it if it were a field.

3. Draw a circle around the figure that has the greatest perimeter in the following pairs.

   Remember to **estimate** first. Then draw a circle around the figure you think has the largest perimeter. Check your answer by counting.

a.

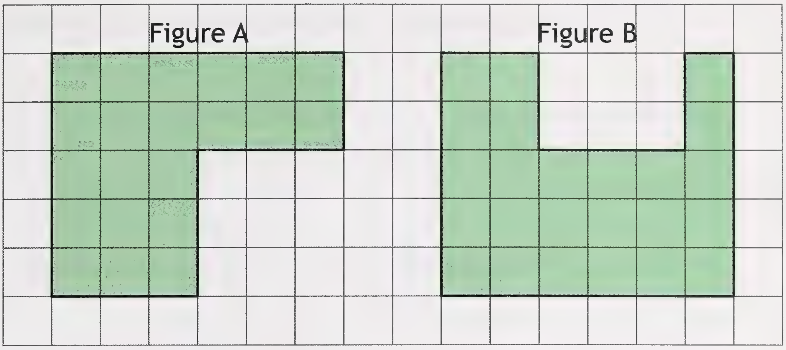


Figure A
Figure B

b.

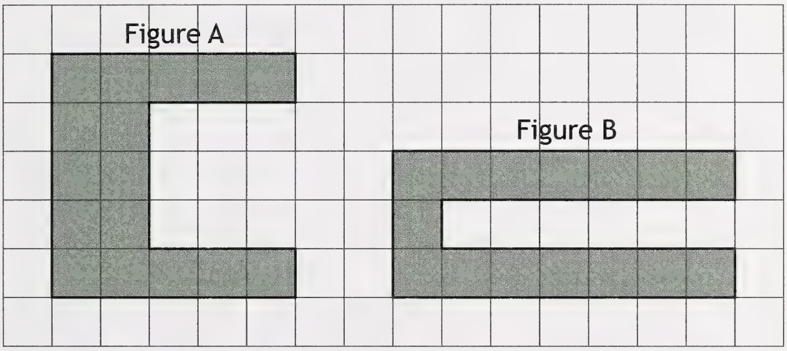


Figure A
Figure B

c.

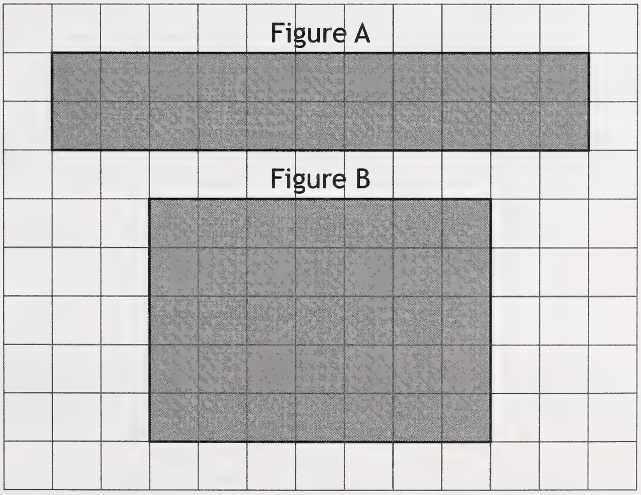


Figure A
Figure B

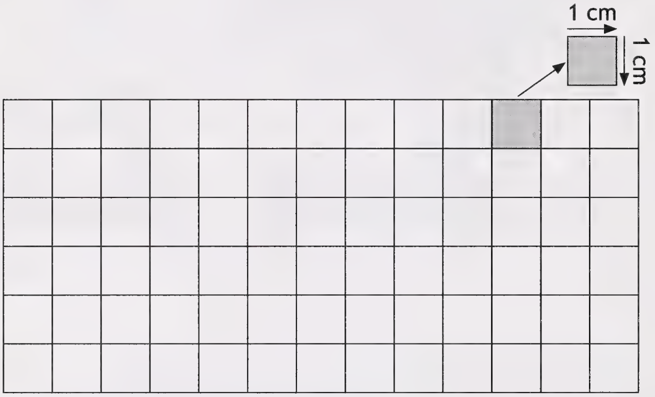
Check your answers in the Appendix.

Discovering More About Perimeter

For this activity, find a sheet of grid paper for Day 12 in the Cut-Out Learning Aids section of the Appendix. You will also need to use your centimetre ruler.

Remember: Perimeter is the total distance around the outside of a figure.

On your sheet of grid paper, each square measures 1 cm long and 1 cm wide.



4. **a.** On your grid paper, shade in a square that is 1 cm by 1 cm. What is the perimeter of this square? ____________ cm

   b. Shade in a square that is 2 cm by 2 cm. What is the perimeter of this square? ____________ cm

   c. Shade in a square that is 3 cm by 3 cm. What is the perimeter of this square? ____________ cm

Check your answers in the Appendix.

Now the information from question 4 can be put in a T-table.

Length of Side (cm)	Perimeter (cm)
1	4
2	8
3	12
4	
5	
6	
7	
8	
9	
10	

5. If the side of the square is 4 cm, can you predict what the perimeter will be? Write your answer on the T-table.

6. Complete the T-table for all the squares with sides up to 10 cm long.

Check your answers in the Appendix.

7. The rule for the T-table is ______________________________

____

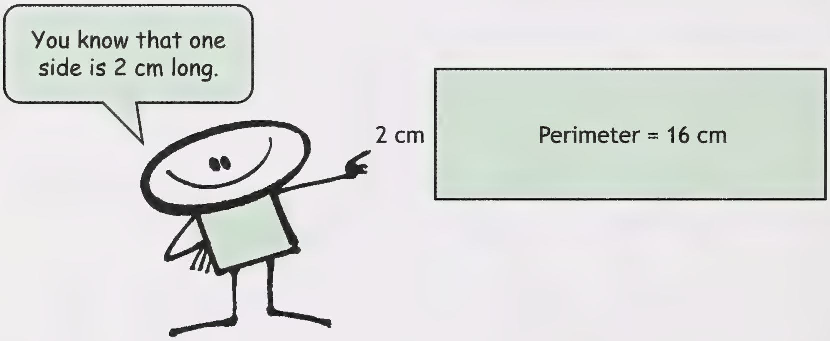
Check your answer in the Appendix.

Perimeter Problems

The following problem asks you to use the perimeter of a rectangle to find the length of each side.

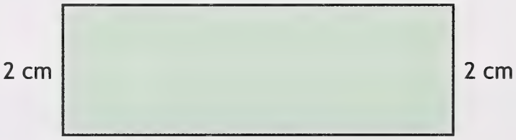
The perimeter of a rectangle is 16 cm. The length of one side is 2 cm. What are the lengths of all four sides?

To solve this problem, it is helpful to draw a sketch or diagram.


You know that one side is 2 cm long.
2 cm
Perimeter = 16 cm

Perimeter of a rectangle = Width + Length + Width + Length

If one side is 2 cm long, the opposite side is also 2 cm long.

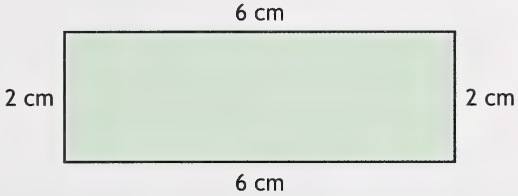


Subtract 2 cm + 2 cm from 16 cm.

16 cm – 4 cm = 12 cm

The remaining part of the perimeter is 12 cm. The lengths of the two longer sides totals 12 cm. Therefore, each side is half of 12 cm.

12 cm ÷ 2 = 6 cm



The length of each longer side is 6 cm.

The lengths of the four sides of the rectangle are

2 cm + 6 cm + 2 cm + 6 cm

Solve the following perimeter problems on your own. Draw a picture to help you.

8. A rectangle has a perimeter of 36 cm. One of the sides measures 8 cm. What are the lengths of all four sides?

9. A rectangle has a perimeter of 70 cm. One of the sides measures 24 cm. Find the length of all four sides.

Check your answers in the Appendix.

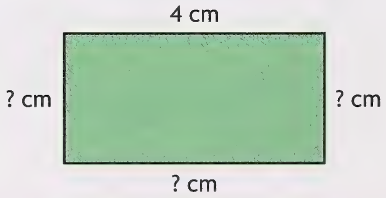
Another way to solve problems with missing numbers is to use grid paper.

Find a sheet of centimetre grid paper for Day 12 in the Cut-Out Learning Aids section of the Appendix.

10. a. On your grid paper, shade in a rectangle with a perimeter of 12 cm. Make one side measure 4 cm.

b. Calculate the lengths of the other three sides of the rectangle. Write them here.

___4___ + ________ + ________ + ________ = 12 cm



Check your answers in the Appendix.

11. **a.** Shade in a rectangle that is 4 cm long and 3 cm wide.

b. What is the perimeter of this rectangle? __________

12. **a.** Shade in a rectangle that is 4 cm wide and 7 cm long.

b. Use the shortcut rule for rectangles to calculate the perimeter.

Perimeter = 2(length) + 2 (width)
= __________ + __________
= __________

Check your answers in the Appendix.

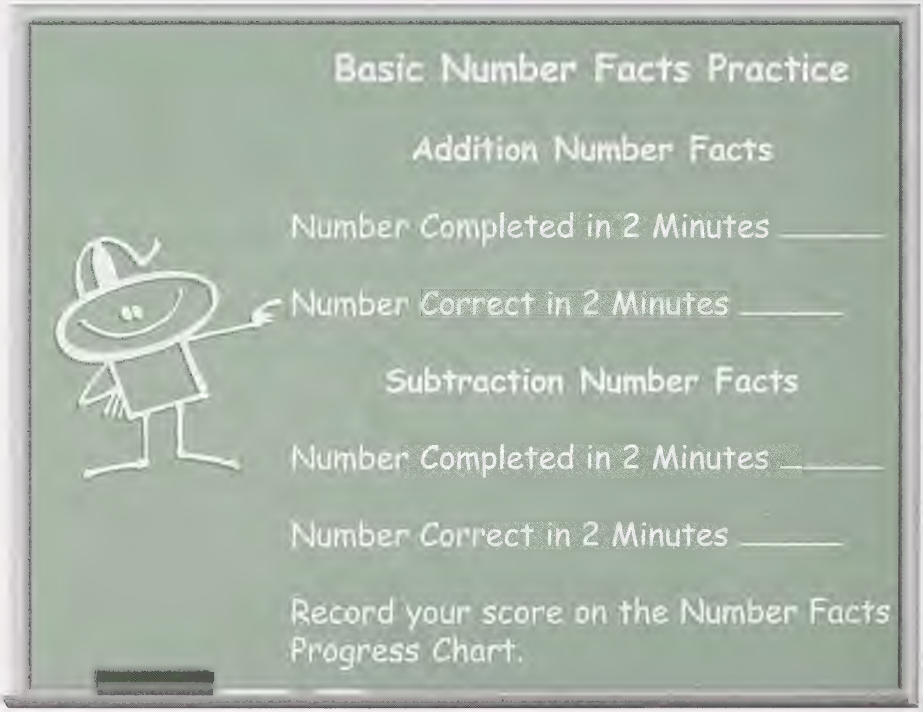
For more practice with calculating perimeter, play the Shape Surveyor game at FunBrain.com.

http://www.funbrain.com/kidscenter.html

Basic Number Facts Practice

Before you begin your Assignment Booklet activity for today, practise some basic addition and subtraction facts.

Ask your home instructor to time you as you complete the following exercises. Your goal is to complete all 25 questions in each exercise in 2 minutes. At the end of 2 minutes, count up how many questions you were able to complete. Write this number in the chart below. Then use the answer key in the Appendix to mark the exercise, and record your score in the space provided. Before you move on, go back and complete any questions you did not finish during the 2 minutes. Mark these questions using the answer key as well.



Basic Number Facts Practice

Addition Number Facts

Number Completed in 2 Minutes ______

Number Correct in 2 Minutes ______

Subtraction Number Facts

Number Completed in 2 Minutes ______

Number Correct in 2 Minutes ______

Record your score on the Number Facts Progress Chart.

13. Addition Number Facts

Timed Exercise: 2 minutes

$\begin{array}{r} 9 \\ +\ 6 \\ \hline \end{array}$ $\begin{array}{r} 4 \\ +\ 8 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ +\ 7 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ +\ 3 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ +\ 6 \\ \hline \end{array}$

$3 + 8 =$ $9 + 5 =$ $4 + 9 =$ $8 + 7 =$ $5 + 8 =$

$\begin{array}{r} 6 \\ +\ 6 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ +\ 7 \\ \hline \end{array}$ $\begin{array}{r} 6 \\ +\ 9 \\ \hline \end{array}$ $\begin{array}{r} 5 \\ +\ 7 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ +\ 8 \\ \hline \end{array}$

$8 + 4 =$ $5 + 6 =$ $6 + 8 =$ $4 + 7 =$ $9 + 3 =$

$\begin{array}{r} 9 \\ +\ 8 \\ \hline \end{array}$ $\begin{array}{r} 7 \\ +\ 4 \\ \hline \end{array}$ $\begin{array}{r} 8 \\ +\ 5 \\ \hline \end{array}$ $\begin{array}{r} 3 \\ +\ 7 \\ \hline \end{array}$ $\begin{array}{r} 9 \\ +\ 9 \\ \hline \end{array}$

Check your answers in the Appendix.

STOP

14. Subtraction Number Facts
Timed Exercise: 2 minutes

$\begin{array}{r} 15 \\ -\ \ 6 \\ \hline \end{array}$ $\begin{array}{r} 13 \\ -\ \ 4 \\ \hline \end{array}$ $\begin{array}{r} 17 \\ -\ \ 9 \\ \hline \end{array}$ $\begin{array}{r} 16 \\ -\ \ 7 \\ \hline \end{array}$ $\begin{array}{r} 11 \\ -\ \ 7 \\ \hline \end{array}$

$13 - 8 =$ $15 - 7 =$ $12 - 4 =$ $11 - 4 =$ $16 - 8 =$

$\begin{array}{r} 15 \\ -\ \ 8 \\ \hline \end{array}$ $\begin{array}{r} 14 \\ -\ \ 8 \\ \hline \end{array}$ $\begin{array}{r} 13 \\ -\ \ 5 \\ \hline \end{array}$ $\begin{array}{r} 17 \\ -\ \ 8 \\ \hline \end{array}$ $\begin{array}{r} 18 \\ -\ \ 9 \\ \hline \end{array}$

$14 - 7 =$ $15 - 8 =$ $13 - 9 =$ $12 - 3 =$ $11 - 9 =$

$\begin{array}{r} 11 \\ -\ \ 6 \\ \hline \end{array}$ $\begin{array}{r} 14 \\ -\ \ 6 \\ \hline \end{array}$ $\begin{array}{r} 14 \\ -\ \ 9 \\ \hline \end{array}$ $\begin{array}{r} 13 \\ -\ \ 7 \\ \hline \end{array}$ $\begin{array}{r} 12 \\ -\ \ 5 \\ \hline \end{array}$

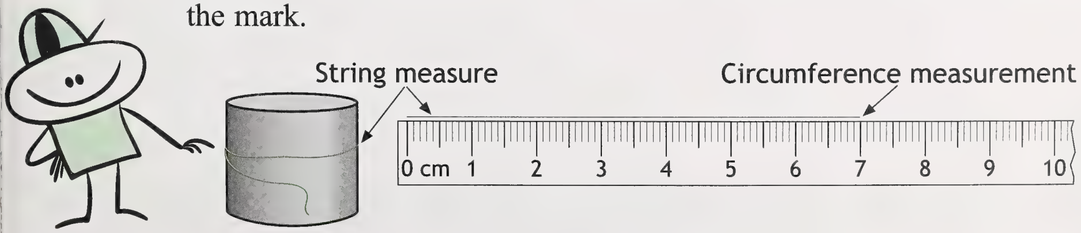
Check your answers in the Appendix.

Turn to Assignment Booklet 7B, and complete the activities for Day 12.

Circumference

Circumference is the distance around the outside of an object or figure that has a curved shape. The term *circumference* is used when the perimeter of a figure does not have straight sides. For example, the total distance around the outside of a circular flower bed is called the circumference. It is the same as the perimeter.

A simple way to measure the distance around a circular object is to use a piece of string. Wrap the string once around the object you are measuring. Make a mark on the string or hold your thumb and finger at the point on the string that shows the distance around the object. Lay the string out in a straight line. Use a ruler to measure the length from the end of the string to the mark.



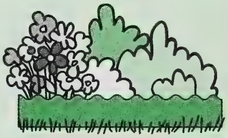
1. Ask your home instructor to help you with this activity. Use a string to measure these objects from your home. Then place the string beside a ruler or regular tape measure to find the circumference measurements. Use centimetres or millimetres to measure.

   a. a pop can ____________ **b.** a garbage can ____________

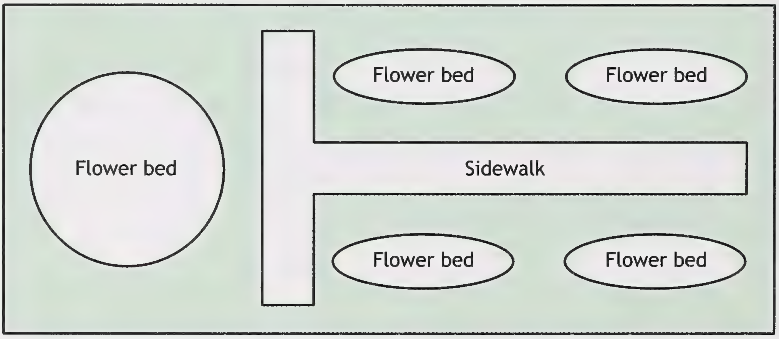
Check your answers in the Appendix.

Solving Circumference Problems

You have been given the job of putting plastic lawn edging around the sidewalks and flower beds in your backyard to keep the grass from spreading into these areas. How much lawn edging should you buy?



To solve this problem, look at the diagram of the yard.



2. What things do you have to measure in order to know how much lawn edging to buy?

____

____

____

Check your answers in the Appendix.

To measure the round flower beds, you could use the string method you have learned about. A faster way is to use a flexible tape measure that already has distance units (mm, cm, dm, and m) marked on it.

Tape measures are used by carpenters, landscapers, tailors—anyone who must measure figures that do not always have straight lines.

Find the tape measure you used in Section 1. Use it to help you measure circumference in the following activities.

Measuring Circumferences

You can measure the circumference at various places on a person's body.

3. **a.** Use a tape measure to measure the following circumferences on yourself and one other person. Record the measurements for each person on the chart.

Body Measurements (in cm)

	Name:	Name:
Wrist		
Waist		
Neck		
Head		
Bicep (upper arm)		

b. Do you notice anything when you compare your measurements to the other person's measurements? Which body part has the largest measurement? Which has the smallest? Were any measurements nearly the same?

____

____

____

____

Check your answers in the Appendix.

Using a flexible cloth or fabric tape measure is an easy way to measure the circumference of a figure. Using a straight-edged ruler to measure a round object (like a soup can) would not be easy!

4. Use a flexible tape measure or a string to find the circumference of several household objects.

First, search your home for objects that are similar to the ones listed in the chart. (If the objects are slightly different, don't worry about it.) Then measure!

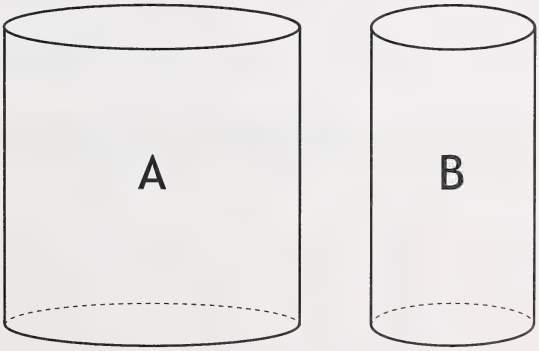
Object	Circumference (cm)
Soup can	
2-L pop bottle	
Coffee mug	
Plant pot	
Bucket or pail	

Check your answers in the Appendix.

Comparing Height and Circumference

In the first part of the module you practised estimating height.

Look at these two objects. They are called **cylinders**.



5. Compare Cylinder A to Cylinder B. Circumference is the distance around the outside of an object that has a curved shape.

   a. Which cylinder has the larger circumference? ____________

   b. What can you say about the height of the two cylinders?

   ____

   ____

Check your answers in the Appendix.

Look at Cylinder A only. Compare its circumference to its height.

This is easier to estimate if you think of using a string. If you measured the circumference with a string and then stretched it out straight, would the length of the string be taller or shorter than the height of the cylinder?

6. Which of the following is true for Cylinder A? Put an ✗ in the box.

   ☐ The circumference is larger than the height.
   ☐ The circumference is the same size as the height.
   ☐ The circumference is smaller than the height.

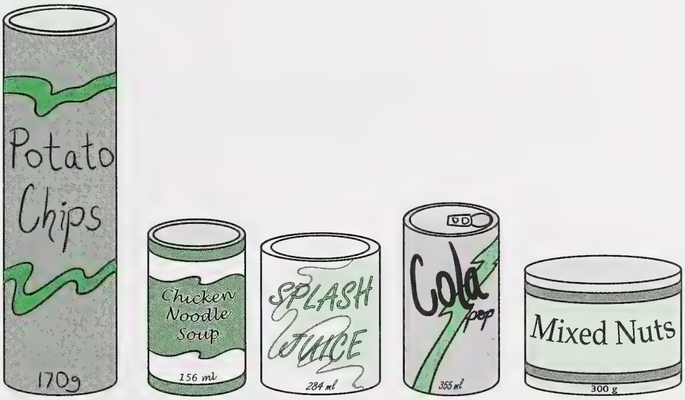
Check your answer in the Appendix.

When you look at Cylinder A, it is quite easy to tell that the height of the container is smaller than the distance around the outside of the container. Is the same true for Cylinder B? It is more difficult to tell from the picture. To be sure, you would probably have to measure.

Amazing Containers

For the following activity you need **five** different empty cans. Number your cans from 1 to 5. Try to include the following types of cans:

- a potato chip can
- a soup can
- a small juice can
- a pop can
- another can that has different size from the other four


Potato Chips
170g
Chicken Noodle Soup
156 ml
SPLASH JUICE
284 ml
Cola pop
355 ml
Mixed Nuts
300 g

In this activity you will look at different sizes of containers and decide whether you think height and circumference are related in any way. As you work, keep these questions in mind:

- When is the circumference larger than the height?
- When is the circumference smaller than the height?
- Are the height and the circumference ever the same?

Set out the five cans in a row on your desk so that you can see them all at the same time.

7. **a.** First, **predict** whether each can's height or circumference is greater. Use check marks to show your prediction in the first column.

	Predict Which is greater? (✓)		Estimate		Measure	
	Height	Circumference	Height	Circumference	Height	Circumference
Can 1						
Can 2						
Can 3						
Can 4						
Can 5						

b. Next, estimate the height and the circumference of each can. Write your estimates (in cm) in the two middle columns.

c. Finally, **measure** the height and circumference of each can. Use a tape measure or a string and ruler. Write your measurement (in cm) in the last two columns.

Check your answers in the Appendix.

8. Use the information that you recorded in the table to answer the following questions.

a. Compare your predictions with the actual measurements. Did you make correct predictions for each of the cans? Circle **Yes** or **No**.

• Can 1	Yes	No
• Can 2	Yes	No
• Can 3	Yes	No
• Can 4	Yes	No
• Can 5	Yes	No

b. Which statement is true based on the data in your table? Put an ✗ in the correct box.

☐ For most cans, the circumference is greater than the height.
☐ For most cans, the height is greater than the circumference.

c. What surprised you the most about this activity?

____

____

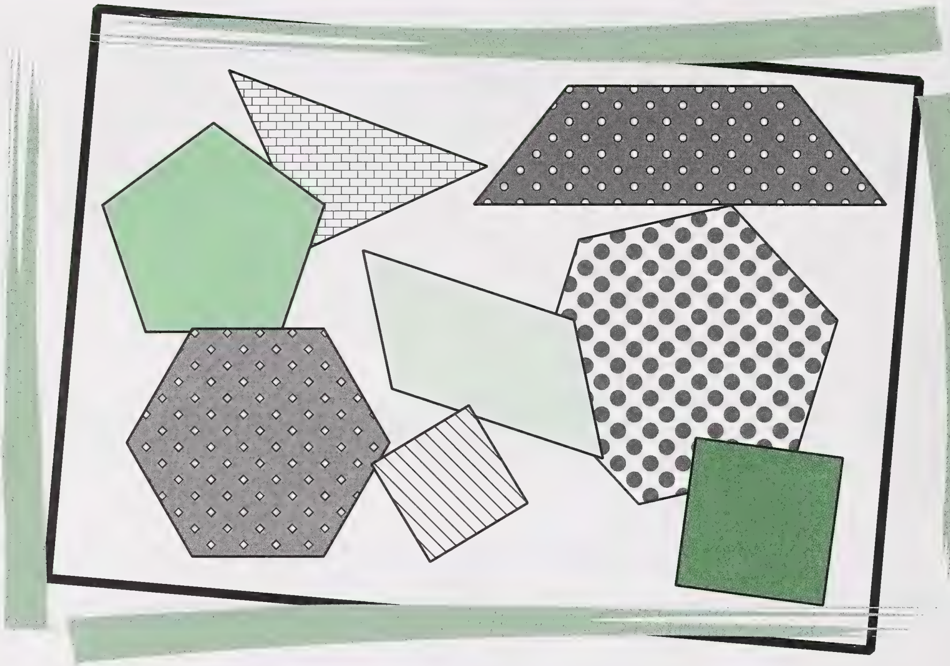
____

Check your answers in the Appendix.

Turn to Assignment Booklet 7B, and complete the activities for Day 13.

Day 14

Perimeter of Polygons



There will be times when you need to find the perimeter of **figures** and objects that are not squares or rectangles. The figures above are called **polygons**.

Polygons are shapes or figures with **many sides.**

In today's lesson you will review what you have discovered about perimeter. You will also learn how to find the perimeter of many different polygons.

1. Complete the following sentences.

a. To find the perimeter of a square, multiply the length of one side by ____________.

b. To find the perimeter of a rectangle, add together two times the

________________ and two times the ________________.

2. How do you find the circumference of a figure that does not have straight sides?

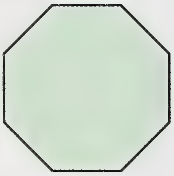
____

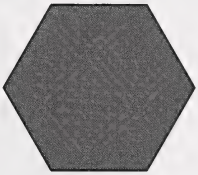
____

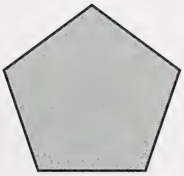
Check your answers in the Appendix.

Different Kinds of Polygons

Polygons have many sides. Some polygons have sides that are all the same length. Following are some examples of polygons with sides that are all the same length.

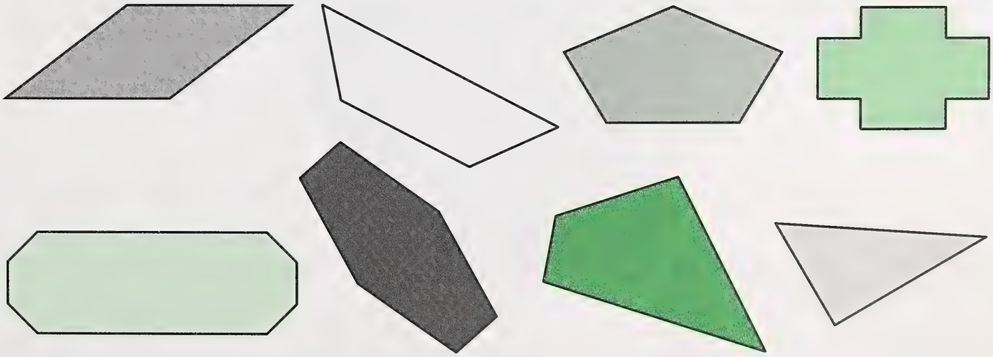

Octagon


Hexagon


Pentagon

Square

Other polygons have sides of various lengths.

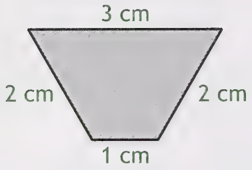


Perimeters of polygons are measured in the same way as the perimeters of squares and rectangles:

- Measure the length of each side.
- Record each measurement.
- Add the measurements together.

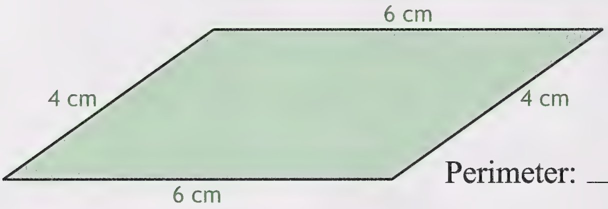
3. Find the perimeter of each polygon.

a.


3 cm
2 cm
2 cm
1 cm

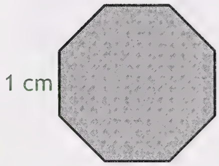
Perimeter: ______________________

b.


6 cm
4 cm
4 cm
6 cm

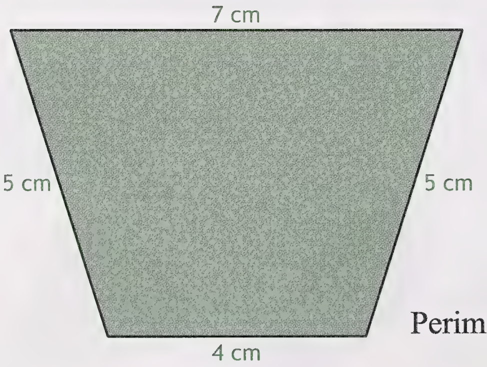
Perimeter: ______________________

c.



Perimeter: ______________________

d.

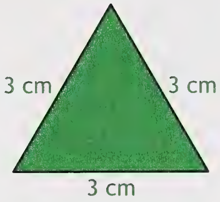

7 cm
5 cm
5 cm
4 cm

Perimeter: ______________________

Check your answers in the Appendix.

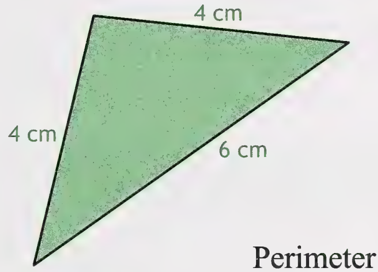
4. What is the perimeter of each triangle?

a.



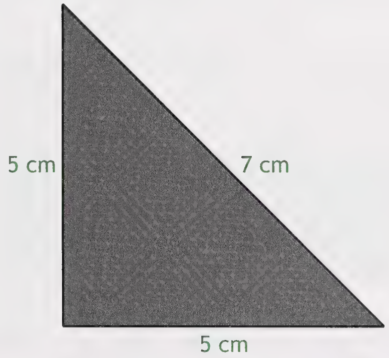
Perimeter: ____________________

b.



Perimeter: ____________________

c.



Perimeter: ____________________

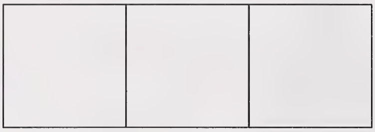
Check your answers in the Appendix.

Thinking About Arrangements

You know how to find the perimeter of one square.

What would happen if you arranged several squares together? How would you find the perimeter?

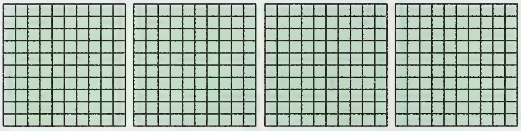
5. To find the perimeter of this figure, would you find the perimeter of each square and add them together? Tell why this would or would not work.



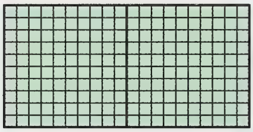
Check your answer in the Appendix.

Remember: To find the perimeter of a polygon, you must add the lengths of all the outside edges of the polygon.

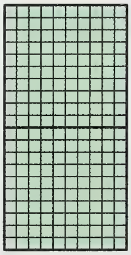
For this activity you will need to use your base ten blocks. Take out four hundreds flats.



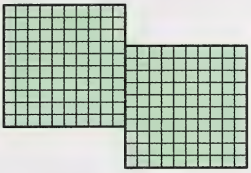
Arrange the four flats so that the one whole side of each flat is touching one whole side of another flat. The sides should look like this.



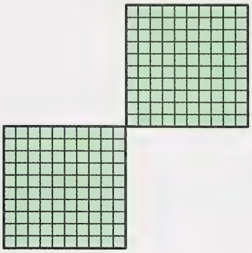
or



They should **not** look like this.



or



6. How many ways can you arrange the flats so that **all four** flats are touching?

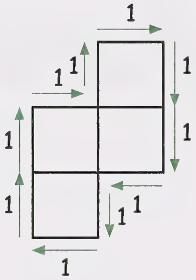
Use your flats to find all the different arrangements you can make. Draw your arrangements on the following grid. Each square on the grid represents one flat. Write the perimeter of each arrangement beside each drawing.

Check your answer in the Appendix.

7. What did you discover about the perimeters of the arrangements you made in question 6?

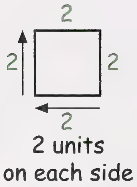
Check your answer in the Appendix.

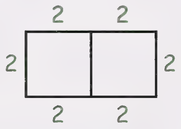
You added the length of the edges on the outside of each arrangement to find the perimeter.

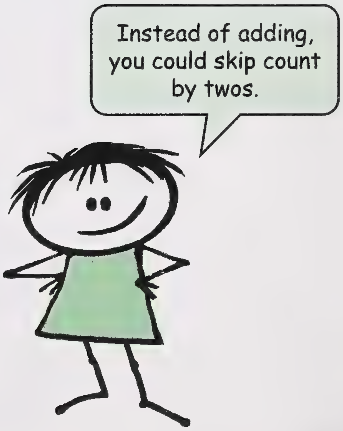

1
1
1
1
1
1
1
1
1
1

Perimeter = 10 units

If the side of a square is **2 units** long, what would you do to find the perimeter of an arrangement of these squares? Find the perimeter by adding the sides of the new rectangle shape.


2
2
2
2
2 units
on each side



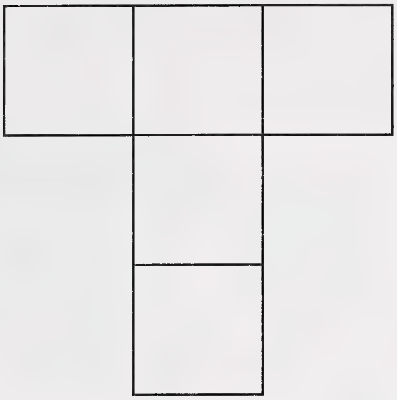

Instead of adding, you could skip count by twos.

2 units + 2 units + 2 units + 2 units + 2 units + 2 units = 12 units

The perimeter of the rectangle arrangement is 12 units.

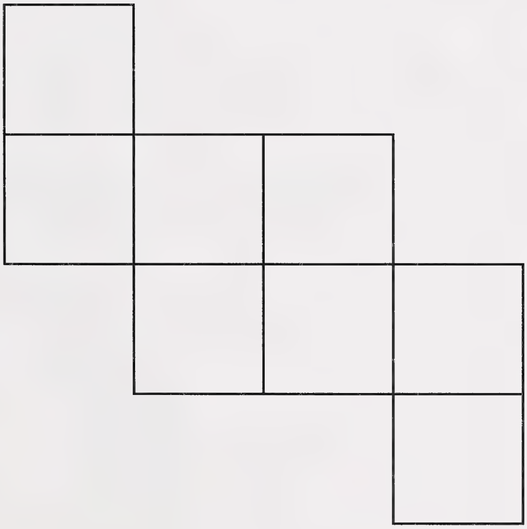
8. Each side of each square is 2 cm long. What is the perimeter of the figures formed by the following arrangements?

a.



Perimeter = __________ cm

b.



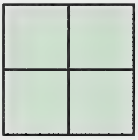
Perimeter = __________ cm

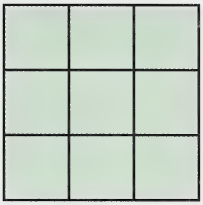
Check your answers in the Appendix.

Perimeter Patterns

You can create arrangements with squares or rectangles. Do these arrangements make a pattern? To find out, look at these squares. **P** stands for **perimeter**.

1 square
P = 4 units


4 squares
P = 8 units


9 squares
P = 12 units

Turn to the Cut-Out Learning Aids section of the Appendix for Day 14. Cut out the small squares. Use them as units to build more squares. Fill in the T-table that follows.

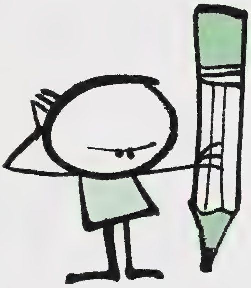
9. **a.** Look for a pattern.

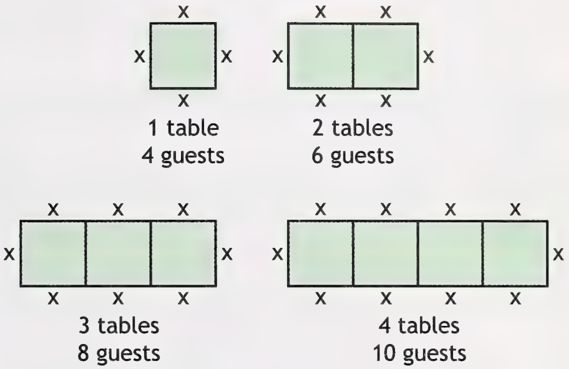
Number of Squares	Perimeter
1	4 units
4	8 units
9	12 units
16	units
25	units
36	units

b. What is the rule for the pattern?

Now, arrange your squares in a different way. This time, the side of each square will stand for one guest.

Pretend that you are arranging tables in a restaurant. You need to have long tables to seat guests. One square table will seat four guests, two tables together will seat six guests, three tables will seat eight guests, and so on.




1 table
4 guests
2 tables
6 guests
3 tables
8 guests
4 tables
10 guests

10. Look for a pattern in how many guests can be seated if you keep adding one more table. Complete the T-table.

Number of Tables	Guests
1	4
2	6
3	8
4	10
5	
6	
7	
8	
9	

11. a. How many guests would you be able to seat if you had an arrangement of five tables? __________ guests

b. How many guests would you be able to seat at seven tables?

__________ guests

c. How many tables would you need to seat 20 guests?

__________ tables

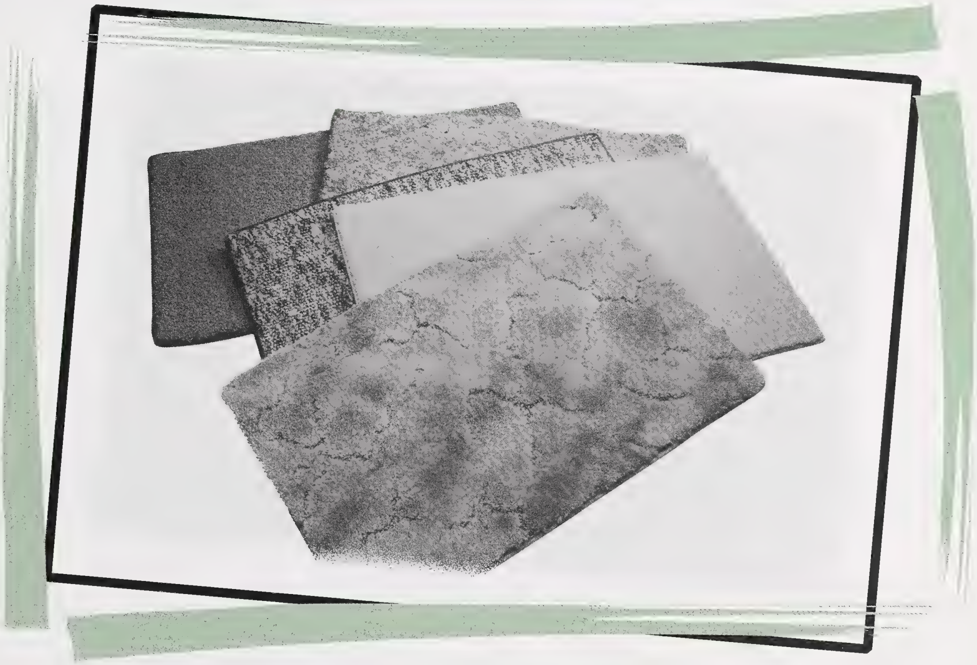
Check your answers in the Appendix.

Turn to Assignment Booklet 7B, and complete the activities for Day 14.

All About Area

Jenna and Richelle's parents bought new carpet for their living room, and now the carpet layers are getting ready to put the new carpet in.

Jenna and Richelle are interested in how the new carpet will be installed, so they are watching the carpet layers carefully.



What Is Area?

The carpet layers began by measuring the length of all the sides of the living room. Jenna and Richelle were curious about all the measuring they did.

Jenna thought that the carpet layers would just bring in the carpet and then cut it to fit. But the carpet layers explained that it is very important to find the **area** of the room first so they know how much carpet is needed and how much to cut.

Try this activity to find out about **area**.

Turn to pages 112 and 113 of your textbook. Look at the hand prints. Each hand print covers some of the squares on the grid. Some squares are completely covered by the hand prints, others are only partly covered.

1. Answer the questions about the hand prints on pages 112 and 113.

a. Which hand print covers the largest area (or space)? Explain why you think so.

____

____

____

b. Which hand print covers the smallest area (or space)?

____

c. **Estimate** the area of each hand print.

- Left hand print: ____________ squares
- Middle hand print: ____________ squares
- Right hand print: ____________ squares

Check your answers in the Appendix.

Now, draw your own hand print! You will need help from your home instructor or a friend or family member.

Turn to Day 15 in the Cut-Out Learning Aids section of the Appendix. Take out **two** pages of grid paper.

Place your hand flat on the paper with your fingers together. Use a pencil to draw around the shape of your hand.

Now ask someone else to draw his or her hand on the other sheet of grid paper. Put your name on your hand print so that you remember which is yours. Look at the two drawings.

2. **a.** Whose hand do you think is larger?

    ____

    b. Tell how you know which hand is larger when you look at the two drawings.

    ____

    ____

Check your answers in the Appendix.

3. Look at the drawing of your hand. Now, follow these steps to estimate the area.

    a. Count the whole squares inside the outline first. Record your answer.

    __________ whole squares

    b. Next count parts of squares that take up more than half of a square. Record your answer.

    __________ more-than-half squares

    c. Next, count the small parts of squares that take up less than half of a square. Record your answer.

    __________ less-than-half squares

d. Count the more-than-half squares as whole squares. Add these to your whole squares. Do **not** add on the number of "less-than-half squares." Record your answer.

___________ = whole squares + more-than-half squares.

Your estimate should be close to the actual number.

Check your answers in the Appendix.

The total of whole squares and more-than-half squares gives an approximate measurement of the number of squares inside the outline of your hand.

The number of squares that your hand covers is called the **area** of your hand.

4. Fill out the My Hand column in the chart with the information you gathered about your hand in question 3.

Measuring the Space Inside the Hand Outlines

	My Hand	The Other Person's Hand
Whole Squares		
More-than-half Squares		
Less-than-half Squares		
Whole squares + More-than-half squares		

Check your answers in the Appendix.

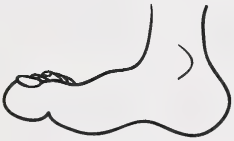
5. Now repeat the steps from question 3 to find the **area** of your friend's hand print. Enter this information in the right column of the table.

6. When you found the area of your hand by counting squares and half-squares, was your answer exact? Tell why or why not.

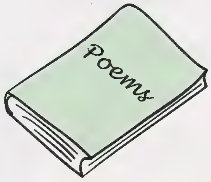
Check your answers in the Appendix.

It's easier to calculate the area of a shape if the outside edges are straight lines. It is more difficult to measure the area when the outside edges are uneven or irregular. When the perimeter is uneven or irregular, the area must be estimated.

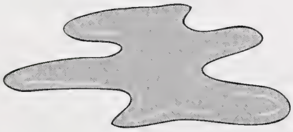
7. Which of these areas would be **easiest** to measure accurately? Circle one.



The amount of space your foot covers



The amount of space on a table that a textbook covers

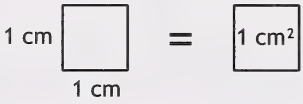


The amount of space covered by a mud puddle

Check your answer in the Appendix.

Measuring Area

Look again at the outline of your hand. Each small square on the paper is 1 cm wide and 1 cm long. Each small square is called a **square centimetre**. The abbreviation for square centimetre is cm^2.



Special Units for Measuring Area

Area is always measured in **square** units.

- A square that is 1 cm long and 1 cm wide is called a **square centimetre** $\left(\text{cm}^2\right)$.
- A square that is 1 mm long and 1 mm wide is called a **square millimetre** $\left(\text{mm}^2\right)$.
- A square that is 1 dm long and 1 dm wide is called a **square decimetre** $\left(\text{dm}^2\right)$.

8. **a.** What would you call a square unit that is 1 m long by 1 m wide?

____

b. How would the short form for this unit be written? ____________

9. Another unit used to measure area is called a **square kilometre**.

a. How big is this square? ____________________

b. What is the short form of this unit? ____________________

Check your answers in the Appendix.

10. Write the short form for each of these measurements.

a. 4 square millimetres ___________

b. 7 square kilometres ___________

11. Write the long form of each of these measurements.

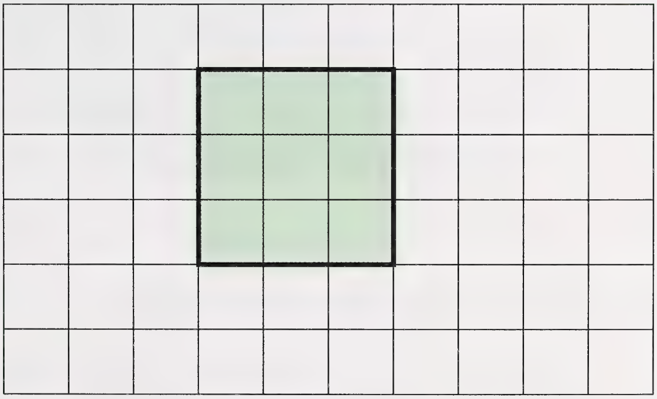
a. 3 dm^2 ____

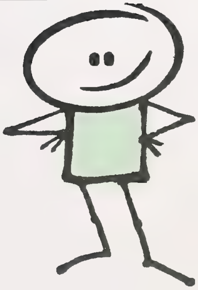
b. 2 m^2 ____

Check your answers in the Appendix.

Calculating the Area of Different Shapes

Count the square spaces covered by the shaded figure.

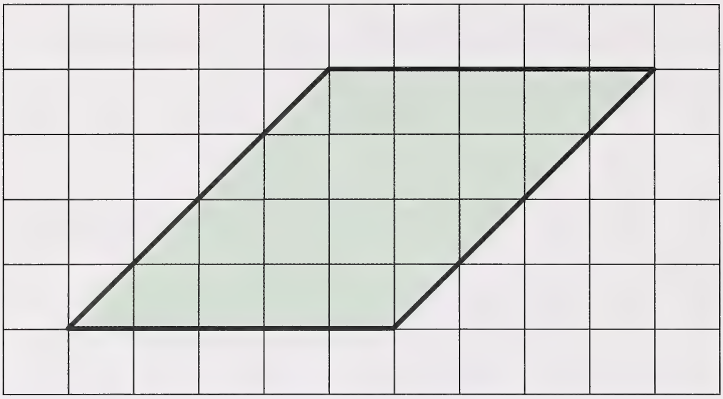




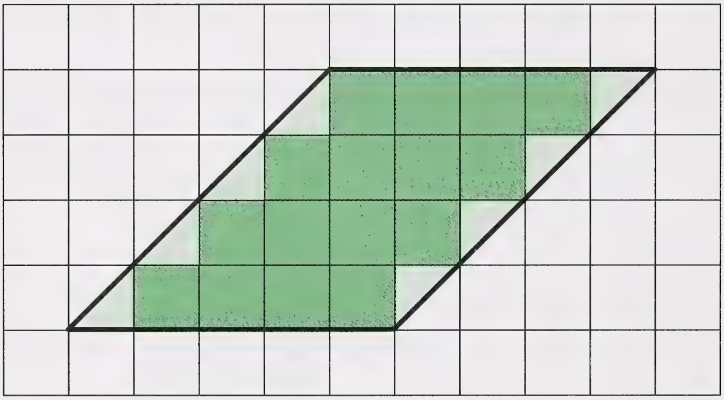
You can see that the shaded figure covers nine squares. The **area** of the figure is **9 square units**. If you know that each square is 1 square centimetre, you can say the area is 9 cm^2.

The area of other shapes can also be calculated.

This figure is called a **parallelogram**.



To find the area of this figure, first count all the squares that are completely covered.



There are **16 whole squares** in the figure.

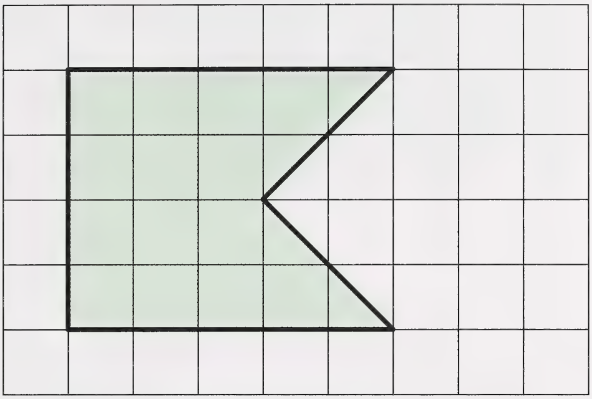
Next, count the squares that are only half covered by the figure. Every two half-squares equals one whole square. There are **eight half-squares,** which equals **four whole squares**.

$16+4=20$

The total area of the figure is **20 square units** or $20\ \text{cm}^2$.

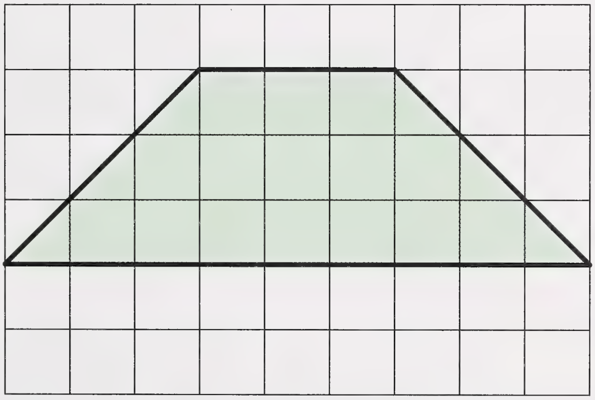
12. Calculate the area of the following figures by counting whole squares and half-squares.

a.



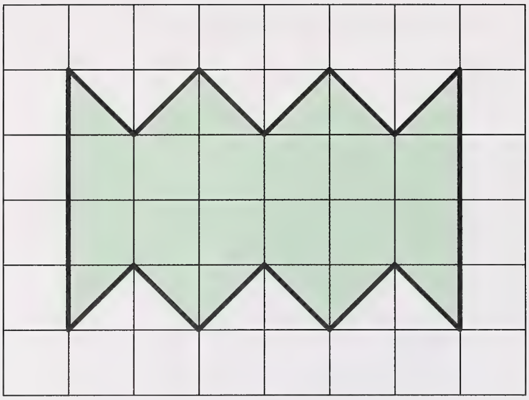
__________ cm^2

b.



__________ cm^2

c.

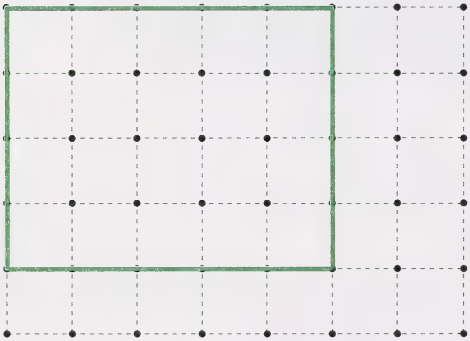


___________ cm^2

Check your answers in the Appendix.

Using Dot Grids

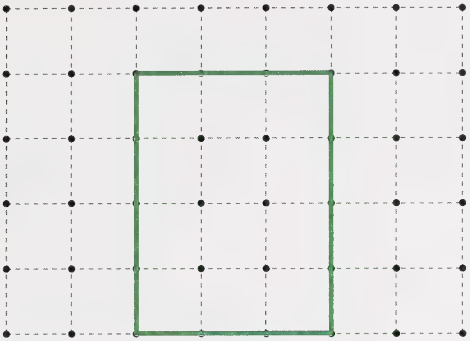
Dot grids can also be used to help calculate area. Imagine that the dots are joined by lines. Squares are formed, just like in a line grid. Each square forms one square unit.



The rectangle on this dot grid covers 20 square units.

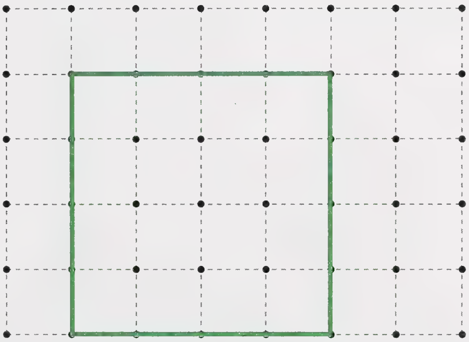
13. What area is covered by the figures on the following dot grids?

a.



Area = ______________________ square units

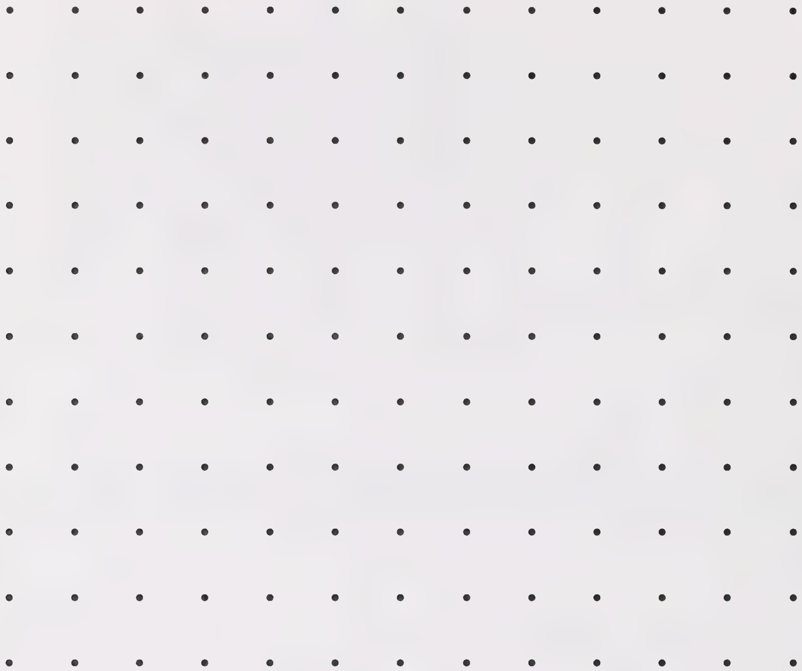
b.



Area = ______________________ square units

Check your answers in the Appendix.

14. Draw a rectangle on the following dot grid. Then find the area.



Area = ____________________ square units

Check your answers in the Appendix.

Turn to Assignment Booklet 7B, and complete the activities for Day 15.

Learning More About Area

Working with Square Metres

A **square metre** $\left(\mathrm{m}^2\right)$ is 1 m long and 1 m wide. Square metres are used to measure large areas.

To get an idea of the size of a square metre, you will make a model. You will need four sheets of newspaper.

Ask your home instructor to help with this activity.

On the floor, overlap the pieces of newspaper to make a large square that is 1 m long and 1 m wide. Use a tape measure or metre-stick to make sure the square is 1 m by 1 m. Tape the pieces of paper together.

Use your finished square-metre tool to measure the areas of some different objects in your home. Place the square metre of newspaper on top of objects in your home.

1. What objects in your home measure about $1\ m^2$?

2. What objects in your home measure about $2\ m^2$?

3. Find two things in your home or yard that measure about $10\ m^2$. Name them.

Check your answers in the Appendix.

4. Would it be easy to use a square metre to measure the area of an envelope? Explain.

5. Which unit should be used to measure the area of a basketball court—a square centimetre or a square metre?

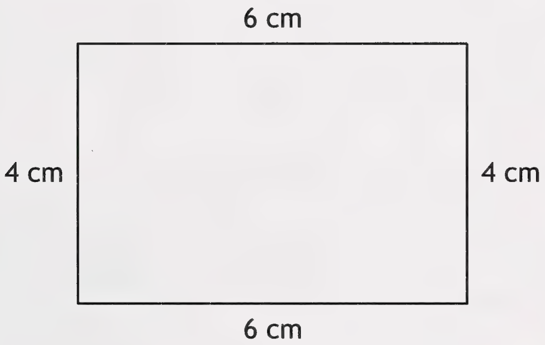
Check your answers in the Appendix.

Calculating the Area of Squares and Rectangles

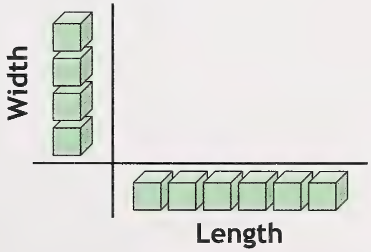
In Day 15 you learned that counting the number of square units will tell you the area of a figure. There is a faster way to calculate the area of square and rectangular shapes.

For this activity you will need your base ten blocks. You will also need your base ten mat for multiplication and division.

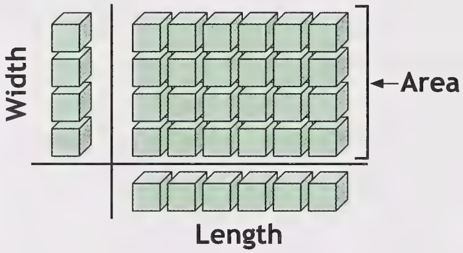
Suppose you want to find the area of a rectangle that is 6 cm long and 4 cm wide. Use your base ten blocks to help you.



Take out the ones cubes. On your mat, show the length by putting 6 ones cubes along the horizontal axis. Show the width by putting 4 ones cubes along the vertical axis.



Remember that in a rectangle you can use the number of units along the width and length to find the total number of **square units** in the rectangle. Instead of drawing them, use unit cubes to stand for the square units. Make four rows of 6 ones cubes.

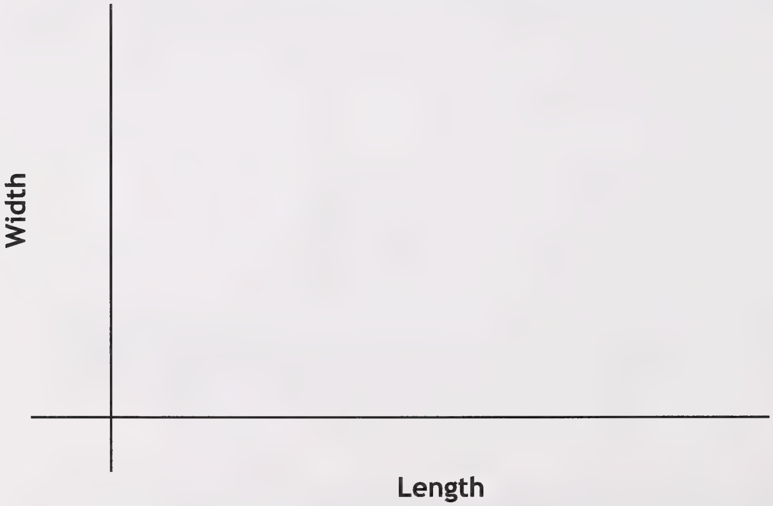


This is similar to an array in multiplication, so you can find the number of cubes by multiplying 4×6.

The area is $4\times 6=24\ \text{cm}^2$.

6. Find the area of a rectangular rug that is 8 m long and 7 m wide.

a. Use your base ten blocks to solve the problem. Then draw your arrangement of blocks below.



b. To find the area of the rug, multiply ______________________________.

c. The area of the rug is ______________________________.

Check your answers in the Appendix.

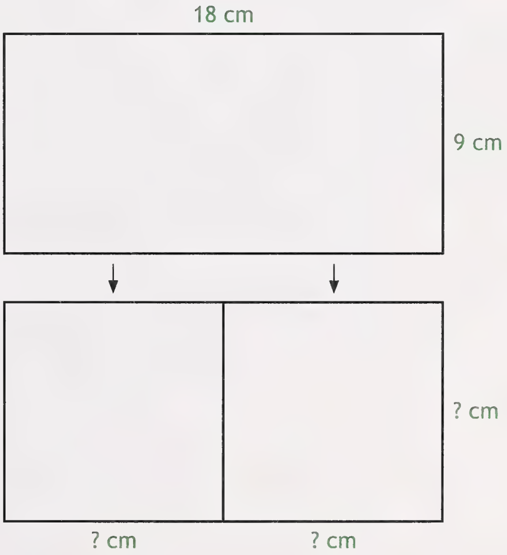
Notice that for rectangles, multiplying the length times the width gives an answer equal to the area.

$$\text{Area} = \text{Length} \times \text{Width}$$

This is also true for squares.

7. A pane of glass in a window is 18 cm long and 9 cm wide. What is the area of this glass pane? Use your base ten blocks if you need to.

Hint: Think of the glass pane as two smaller pieces. What is the length and width of each smaller piece?



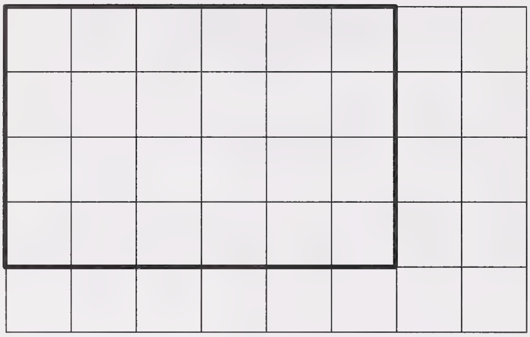
The area of the glass pane is ______________________________.

Check your answers in the Appendix.

Measuring Area and Perimeter

If you know the length and the width of a square or a rectangle, you can find both the perimeter and the length.

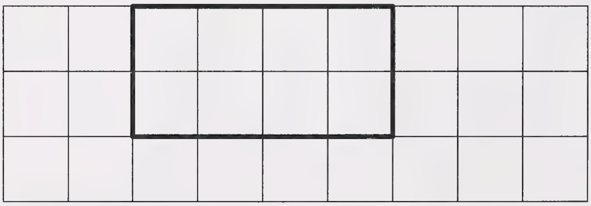
8. a. What is the perimeter of the following shape? Use **cm** in your answer. ____________________



b. What is the area of the shape? Use **cm**^{2} in your answer.

____

9. a. What is the perimeter of the following shape? Use **cm** in your answer. ____________________



b. What is the area of the shape? Use **cm**^{2} in your answer.

____

Check your answers in the Appendix.

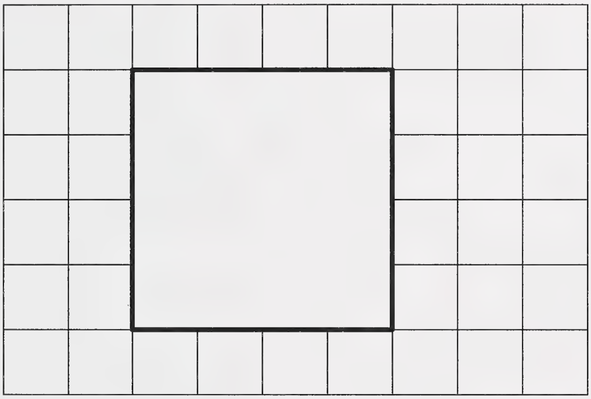
10. a. In the diagram below, no squares are shown inside the shape. Tell how you can find the length of the sides.

____

____

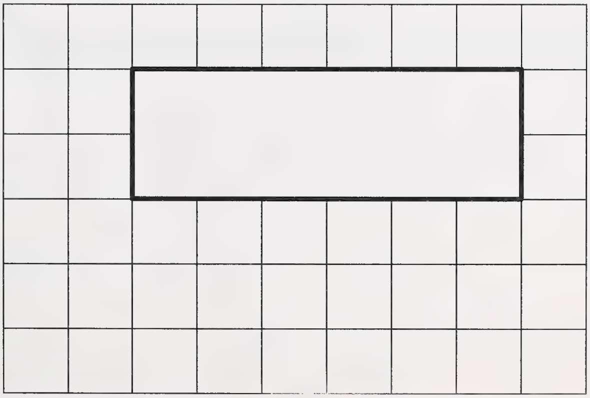
b. What is the perimeter? ______________________________

c. What is the area? ________________________________



11. a. What is the perimeter of the following rectangle? ____________

b. What is its area? ________________________________



Check your answers in the Appendix.

In questions 10 and 11, the perimeter of both shapes is the same, but the area is different.

The shape of a figure can be changed without changing the perimeter. When the shape changes, the area changes.

12. Turn to page 124 in your textbook. Do the question at the top of the page: Finding Area in Square Metres.

For this activity you will need to use a sheet of 1-cm grid paper. Turn to the Appendix and remove one of the grid sheets for Day 16.

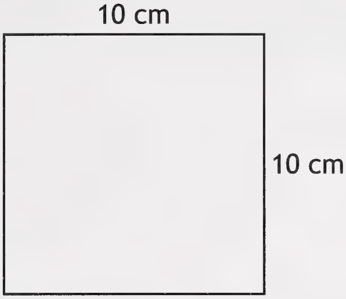
Use the sheet of grid paper to draw all the possible rectangular pens with a perimeter of 24 m. Write the **area** of each pen inside its shape. After you have drawn all of the possible shapes, answer the following question in a complete sentence.

What is the greatest area you can enclose with 24 m of fencing?

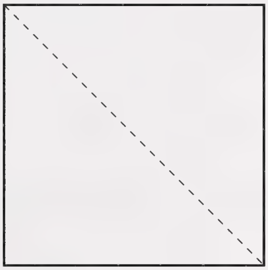
Check your answers in the Appendix.

Is it possible to find the area of half of a square or rectangle? Try this activity to find out. Turn to the Appendix and remove another sheet of grid paper for Day 16.

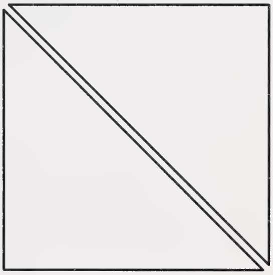
Use centimetre grid paper to draw a square that is 10 cm long and 10 cm wide.



Draw a line from one corner of the square to the other.



Cut out the square. Then cut along the diagonal line to make two triangles.



What do you know about the two shapes—the rectangle and the triangle?

13. a. What is the area of the square? ______________________________

b. Is the area of the two triangles added together the same as the area of the square? __________

c. If each triangle is half of the square, then the **area** of each triangle is also half of the square. What is the area of each triangle?

____

Check your answers in the Appendix.

14. Turn to page 122 in your textbook. Do questions 1 to 3 in On Your Own.

Page 122, On Your Own

1. What is the area of each triangle? (Answer in square units.)

a. __________ **b.** __________ **c.** __________

2. Which have areas of 2 square units? (Circle your answers.)

a. **b.** **c.**

3. Which figures do **not** have an area of 1.5 square units? (Circle your answers.)

a. **b.** **c.**

Check your answers in the Appendix.

Just For Fun

Area Design

Use the grid below to make a colourful design.

Use three or four coloured crayons to fill in several different three-sided and four-sided shapes on the grid paper. Use squares, rectangles, triangles, trapezoids, and diamonds.

Colour all the squares. Don't leave any squares uncoloured. Also, make sure you use whole and half squares. What kind of a design can you make?

Turn to Assignment Booklet 7B, and complete the activities for Day 16.

Putting It All Together (II)

In Section 2 you learned more about area and perimeter. You practised the following skills:

- measuring the perimeter and circumference of figures and objects
- estimating and comparing perimeter, circumference, and area
- comparing height and circumference
- solving story problems
- measuring and calculating the area of figures
- choosing suitable units to measure perimeter and area

Today you will show what you have learned about perimeter and area by completing several review questions. You will then work on a Challenge Activity related to the activities you have been working on in Section 2.

Part 1: Reviewing the Concepts

For Part 1 you will complete **all** of the review questions for Day 17 in Assignment Booklet 7B. First, you may wish to look back through the Student Module Booklet to review the concepts covered in Section 2.

Part 2: Challenge Activities

The Challenge Activities in Part 2 are designed to extend and explore ideas about measurement. In Assignment Booklet 7B you will find two Challenge Activities. Choose **either** Activity A **or** Activity B (**or** you may do both if you wish).

Turn to Day 17 in Assignment Booklet 7B, and complete all of the review questions in Part 1. Then do one or both of the Challenge Activities in Part 2.

Day 18

Assessing What You Know (II)

This is the last day you will be working on Section 2: Understanding Perimeter and Area. You are to complete **two** activities in Assignment Booklet 7B:

- Showing What You Can Do
- Basic Number Facts

Read the explanation for both parts before turning to Assignment Booklet 7B. Note that you will need the help of your home instructor for the activities in Parts 1 and 2.

Part 1: Showing What You Can Do

For this activity you will need the help of your home instructor. You will be working on a short activity while your home instructor observes you. As you work through the problem, try to explain what you are doing.

Your home instructor may ask you questions like the following:

- "How do you know that?"
- "Why did you decide to do that?"
- "How did you get that answer?"

Note to the Home Instructor

This performance assessment should take about 20 minutes. The Home Instructor's Assessment Page and accompanying Student's Assessment Page can be found in Day 18 of Assignment Booklet 7B. Remove both pages from the Assignment Booklet. Read over the student's page so you are familiar with the student's assigned task. You should also preview the interview questions and the checklist before the student begins working on the assigned task.

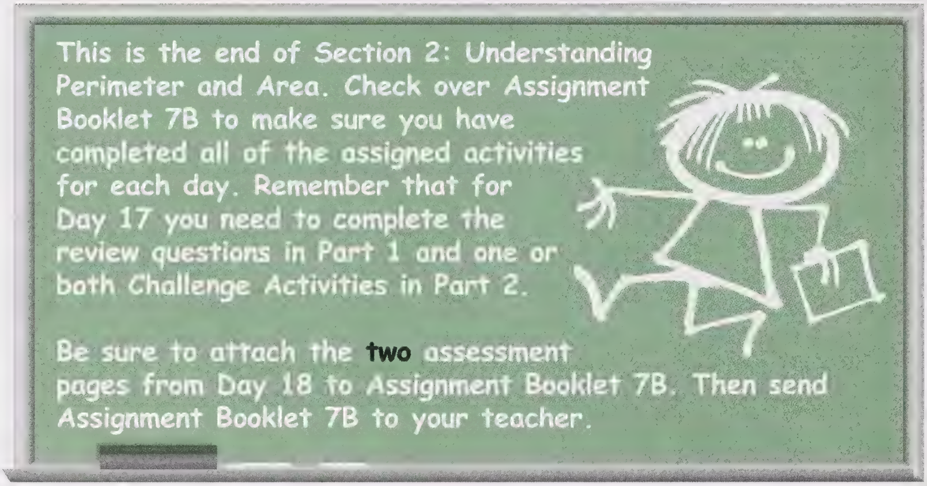
As the student works to answer the questions, encourage him or her to talk about what he or she is doing. **Allow the student to use any manipulatives or cut-out learning aids available to help solve the problem**. You may or may not wish to use some of the interview questions. Look for understanding and the student's ability to explain clearly what he or she is doing to arrive at an answer. Indicate on the checklist whether you feel the student demonstrated the skills being assessed.

Attach both assessment pages to the Assignment Booklet before sending it in for marking.

Part 2: Basic Facts

In this activity you will show how well you are learning the basic number facts for addition and subtraction. Ask your home instructor to time you as you do each test.

When your home instructor is ready, turn to Assignment Booklet 7B, and complete the activities found in Parts 1 and 2 of Day 18.



This is the end of Section 2: Understanding Perimeter and Area. Check over Assignment Booklet 7B to make sure you have completed all of the assigned activities for each day. Remember that for Day 17 you need to complete the review questions in Part 1 and one or both Challenge Activities in Part 2.

Be sure to attach the **two** assessment pages from Day 18 to Assignment Booklet 7B. Then send Assignment Booklet 7B to your teacher.

Section 3

Looking at Capacity, Mass, Money, and Time

150
100
25ml
APPROX.
15
5
5ml
APPROX.

Day 19

How Much Does It Hold?

If you have ever helped with grocery shopping, you have probably noticed that products are sold in many different sizes of containers. The amount that each container holds is often written on the side or top of the item.

In today's lesson you will learn more about measuring the amount a container holds.

Capacity

Capacity is the amount a container holds or the measure of space inside a container.

In order to follow a recipe or buy a certain amount of food, you need to understand how capacity is measured.

Note to the Home Instructor

The student will need a variety of empty containers for the activities in today's lesson. Help the student gather measuring cups and measuring spoons marked in millilitres, an empty 1-L container, a 500-mL container, and a few other bottles, cans, or plastic containers.

Many of today's activities involve pouring water from one container to another. This should be done in an area where the cleanup can be done easily.

1. Look in the fridge. Find **three** containers that hold liquids. What measurement unit is shown on each container? List each container and the measurement unit shown on it.

   - ____________________
   - ____________________
   - ____________________

2. Can you find some other foods in the fridge or cupboards that are not liquids but that are measured in the same kinds of units? List **three** of these containers and the measurement unit shown on each.

   - ____________________
   - ____________________
   - ____________________

Check your answers in the Appendix.

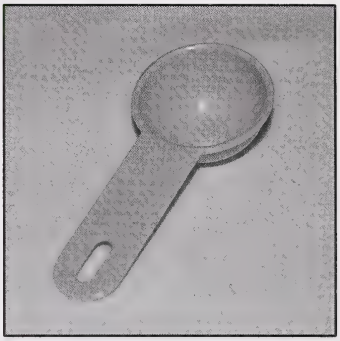
Capacity is measured in units called litres and millilitres.

The short form for litre is **L**. The short form for millilitre is **mL**.

Looking at Millilitres and Litres

VINEGAR
VINAIGRE

The vinegar bottle holds 1 L.

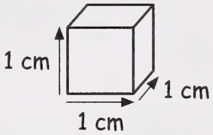


The measuring spoon holds 1 mL.

3. Which unit of measurement is bigger? ______________________

Check your answers in the Appendix.

One millilitre is a very small amount. One millilitre is equal to the amount of liquid that a 1-cm cube would hold.



Think of filling a box the size of a small sugar cube with water. That's about how much a millilitre is. It is a very small unit!

You will need to work in the kitchen or bathroom for the next activities. You will be measuring and pouring small amounts of water. Make sure you have a towel or some paper towels nearby in case you spill.

Find a 1-mL measuring spoon. (If you don't have a 1-mL measuring spoon, you can use one that measures $\frac{1}{4}$ teaspoon. This is close to the same amount as 1 mL.)

4. Find a very small container, like a lid from a jar of baby food or a small plastic cap from a pop bottle. Estimate how many millilitres of water the container will hold and then measure carefully to find the actual amount it holds. Be as accurate as you can. **Note:** When you measure capacity, be sure to fill your measuring tool to the top and pour carefully into the container.

Type of container: ______________________________

Estimated capacity (in millilitres): __________

Actual capacity: __________

Check your answer in the Appendix.

Many things are measured in millilitres. Some common tools used to measure millilitres are measuring cups and measuring spoons.

8oz
250
200
150
125
100
50

Find a measuring cup that is marked in millilitres. Look carefully at the markings on the side. These numbers show the capacity at various levels of the cup.

5. List the millilitre markings shown on the cup from the smallest marking to the largest.

__________, __________, __________, __________, __________

6. How many millilitres will the measuring cup hold when it is filled to the top mark? __________

Check your answers in the Appendix.

7. Find an empty 1-L milk carton or another 1-L container. How many millilitres do you think there are in 1 L? __________

Chocolate
Milk
Wilson & Company
Chocolate
Milk
500 ml

Now find an empty 500-mL container. Fill the container with water to the upper edge. Pour this water into the 1-L container. Notice how much of the 1-L container is filled.

Fill the 500-mL container again and pour it into the 1-L container.

8. How many millilitres does the 1-L container hold? **(Hint:** How many 500-mL containers did it take to fill it?)

500 × __________ = __________ mL

9. How many millilitres would it take to fill a 2-L container? __________

Check your answers in the Appendix.

One litre is equal to 1000 mL. Millilitres are used to measure small amounts. Litres are used to measure larger amounts.

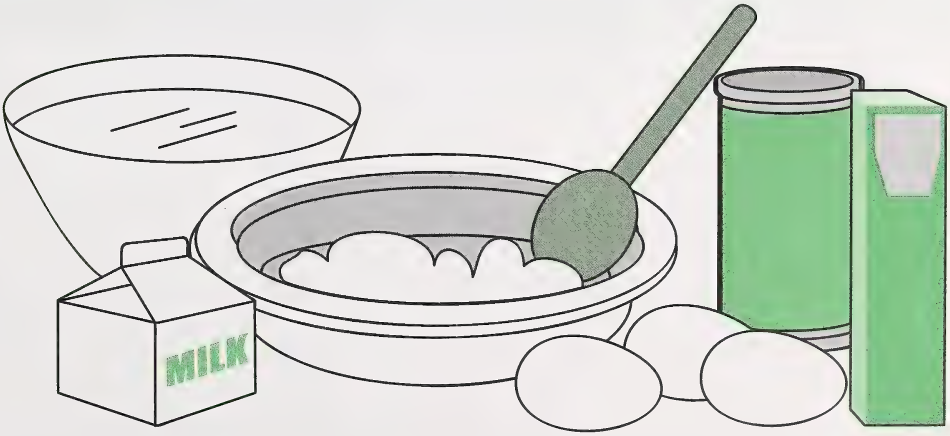
10. Which of these liquids should be measured in millilitres? Circle your answers.

- **a.** gasoline
- **b.** lemon juice for a cake recipe
- **c.** a glass of water
- **d.** cough medicine for a baby
- **e.** paint for a house

11. List **two** things in your home that are measured in litres.

12. List **two** things in your home that are measured in millilitres.

Check your answers in the Appendix.



13. Read the following story about Kelly's busy morning. Write the names of all the things that are measured in millilitres or litres in the chart that follows the story. Beside each item write **mL** if it is usually measured in millilitres and **L** if it is usually measured in litres.

Kelly's Saturday Morning

It was a beautiful Saturday morning. Kelly went into the kitchen and poured a glass of milk and a glass of orange juice for breakfast. After breakfast, Kelly and her brother, Joe, went outside and got into Joe's new car. First they went to a gas station to buy gas.

Joe remembered that he had to pick up some cough syrup, so the drugstore was the next stop. Then Kelly said she was thirsty, so they stopped to buy some bottled water and a snack.

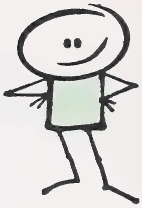
The next stop was the park, where they threw a football around for a while. Kelly was tired after this and said, "Let's go home."

On their way home, they pulled in at the hardware store, where Joe bought some paint for Kelly's bedroom. When they reached home, it was already noon.

Name of Item	Capacity Unit (mL or L)

Check your answers in the Appendix.

Measuring Capacity



With a 250-mL measuring cup, it is easy to find out how many millilitres it takes to fill a large container.

Find an empty 1-L container and a 250-mL measuring cup for this activity. Fill the measuring cup with water. Then empty the water into the 1-L container. Continue filling the cup and emptying it into the larger container until it is full.

14. a. How many 250-mL cups does it take to fill the 1-L container?

____

b. How many millilitres is this equal to? __________ mL

c. __________ mL = 1 L

d. Show how you arrived at this answer.

____

____

Check your answers in the Appendix.

15. a. How many 250-mL cups would it take to fill a 2-L milk carton?

__________ cups

b. How many millilitres is this equal to? __________ mL

c. How many 250-mL cups would it take to fill a 3-L container?

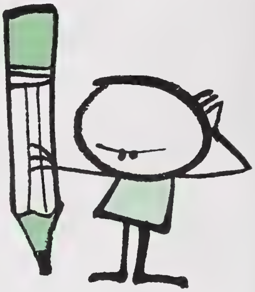
__________ cups

d. How many millilitres is this equal to? __________ mL

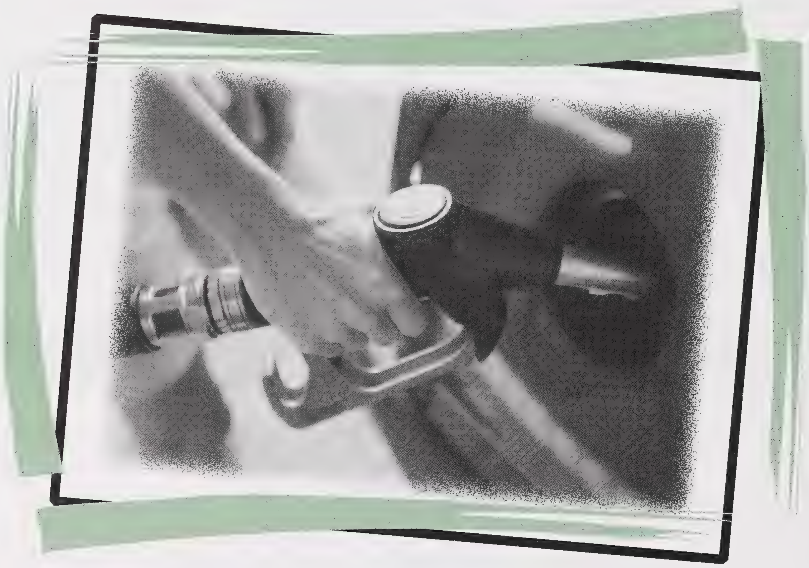
Check your answers in the Appendix.

Estimating Capacity

There will be many times when you will need to estimate or guess the amount that a container will hold.



- "About how many glasses of juice can I fill if I have 5 L of juice?"
- "How much water will this cooking pot hold?"
- "About how many millilitres can I put in this recipe?"
- "About how much gas will we need to put in the car?"



Find an empty 1-L milk carton or another plastic 1-L container for this activity. You will also need an ice-cream pail or a bucket, a large cooking pot, and a basin or sink.

16. a. Estimate the number of litres of water needed to fill each of the containers listed in the chart. Then use your 1-L container to measure the actual capacity of each container.

Container	Estimate	Actual Capacity
Pail	________ L	________ L
Cooking Pot	________ L	________ L
Sink	________ L	________ L

b. Which estimate was closest to the actual capacity?

____

Check your answers in the Appendix.

17. How much is 1 mL? Think about the measuring-spoon activity that you did earlier in the lesson. Estimate which of the following items would hold 1 mL. Circle your answer(s).

a. the space inside the cap from a tube of toothpaste
b. the space inside an egg
c. the space inside a walnut shell
d. the space inside a metal bottle cap

18. Which of the following items have a capacity of about 15 mL? Circle your answer(s).

a. a coffee mug
b. a tablespoon
c. the lid from a ketchup bottle
d. a pill bottle

Check your answers in the Appendix.

Arranging Containers in Order of Size

It is easy to place several containers in order from the smallest capacity to the largest capacity if all the containers are labelled in millilitres.

19. Would you be able to arrange containers in order if some had capacities in litres and others had capacities in millilitres? Try it.

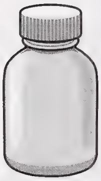
a. Which is larger, 986 mL or 1 L? ____________

b. Which is smaller, 1.5 L or 1000 mL? ____________

c. Which is larger, 2.5 L or 250 mL? ____________

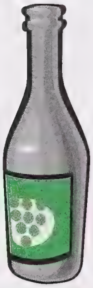
20. Place the following containers in order from largest to smallest. Write the letter for each container in the correct space.

A



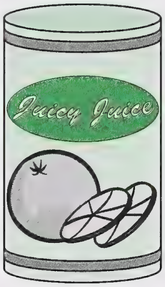
875 mL

B



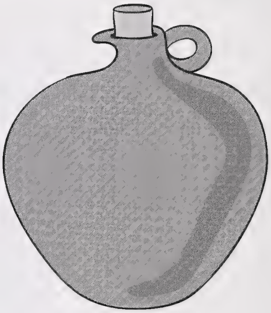
1.2 L

C



1500 mL

D



2.5 L

____________ ____________ ____________ ____________

Largest Smallest

Check your answers in the Appendix.

Turn to Assignment Booklet 7C, and complete the activities for Day 19.

Solving Problems About Capacity

Jenna and Richelle had learned many things about measurement. They knew how to measure length and calculate area and perimeter.

The girls wanted to learn more about measuring. They soon discovered many situations in their home where they had to know how to solve capacity problems.

Solving Capacity Problems

Understanding capacity can help you solve many problems that might occur in your home. Have you ever had a dripping tap in your house?

Turn to page 274 of your textbook. Read the story about Carmen and the dripping tap. Work through the following problem-solving steps to solve Carmen's problem.

Step 1: Understand the problem.

The problem asks you to find two things. First, you need to find how much water will drip from the tap in one day (24 hours). Then you need to find how much water will drip from the tap in one week (7 days).

Step 2: Make a plan. (Choose a strategy.)

Use the Making It Simpler strategy.

You know that 15 mL of water drips from the tap in 60 seconds. Sixty seconds is the same as 1 minute, and you know there are 60 minutes in 1 hour, so you need to multiply 15 mL by 60 minutes to find out how many millilitres of water drip in 1 hour.

To find out how much water is lost in a day, you must multiply your answer by 24 because there are 24 hours in a day.

To find out how much water is lost in a week, multiply your daily loss by 7 because there are 7 days in a week.

To make the answers easier to understand, change millilitres to litres.

Step 3: Try the plan.

You may use your calculator to help you find the answers to some of the questions.

1. a. How many seconds are there in 1 minute? __________ seconds

b. How many millilitres of water drip in 1 minute? __________ mL

c. Multiply your answer to question 1.b. by 60. How many millilitres of water drip in 1 hour? __________ mL

d. How many millilitres of water drip in 1 day? To find the answer, multiply the amount in 1 hour by the number of hours in a day.

__________ mL × 24 hours = __________ mL in one day

e. Change your answer to litres. (Remember that 1000 mL = 1 L.) Use decimals if necessary.

__________ mL = __________ L

2. How many millilitres of water drip in one week? You know that one week is the same as seven days. Use your answer to questions 1.e. and multiply it by 7.

What is the product? __________ L

Solution

3. a. If the tap isn't repaired, __________ L of water will be lost in one day.

b. If the tap isn't repaired, ____________ L of water will be lost in one week.

Step 4: Look back.

4. Is your solution reasonable? ______________________________

Check your answers in the Appendix.

You may need to use measurement and math to help solve other everyday problems.

Sue and Tim have a hot dog stand. Every day they sell about 100 hot dogs and use 1 L of relish and 500 mL of mustard.

The relish is sold in 2-L containers. The mustard comes in 1-L jars. They plan to run their hot dog stand for six days.

How many containers of relish should they buy?

Step 1: Understand the problem.

You must find how much mustard and relish is used in six days. Then you can find how many containers of relish and mustard Sue and Tim need to buy.

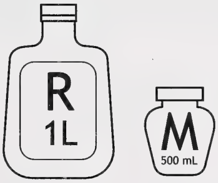
Step 2: Make a plan. (Choose a strategy.)

You could draw diagrams to show the amount of mustard and relish used in six days.

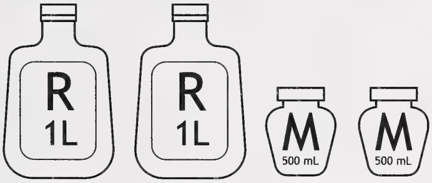
Step 3: Try the plan.

Draw diagrams to show how much is used in the first three days. Let **R** stand for relish. Let **M** stand for mustard.

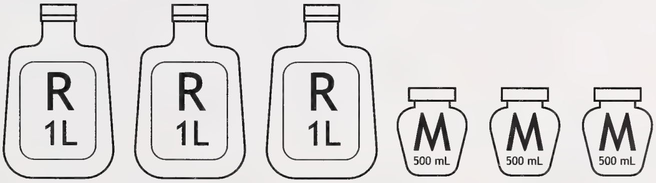
Day 1:



Day 2:


R
1L
R
1L
M
500 mL
M
500 mL

Day 3:


R
1L
R
1L
R
1L
M
500 mL
M
500 mL
M
500 mL

5. a. Continue drawing diagrams for Days 4, 5, and 6.

Day 4:

Day 5:

Day 6:

Check your answers in the Appendix.

b. How much relish is used in six days? __________ L

c. How many 2-L containers of relish must Sue and Tim buy?

____

d. How much mustard is used in six days? __________ mL

e. How many litres is this equal to? __________ L

f. How many 1-L jars of mustard must Sue and Tim buy? __________

Step 4: Look back.

Does your answer make sense?

Check your answers in the Appendix.

Estimating Capacity

You will need the help of your home instructor to complete this estimating activity.

Find three different plastic bottles of varying sizes that have their capacities shown on their labels. You will also need three elastic bands.

Mark the bottles with the names Bottle 1, Bottle 2, and Bottle 3.

6. Look at the labels on the bottles and write the capacity of each bottle in the spaces below.

- Bottle 1: ______________
- Bottle 2: ______________
- Bottle 3: ______________

Ask your home instructor to put a rubber band around each bottle. Make sure the rubber bands are at different heights. Fill each bottle with water to the level of the rubber band.

7. Estimate the quantity of water in each bottle.

- Bottle 1 has about ____________ mL of water.
- Bottle 2 has about ____________ mL of water.
- Bottle 3 has about ____________ mL of water.

8. Use your estimates and the capacity marked on each bottle to calculate how much more water you need to add to fill each bottle.

- Bottle 1 needs ____________ mL more water.
- Bottle 2 needs ____________ mL more water.
- Bottle 3 needs ____________ mL more water.

Check your answers in the Appendix.

Knowing how to estimate amounts of liquid is an important skill. When you are mixing juice or cooking, you often need to estimate how much liquid a container will hold.

Capacity Problems in the Kitchen

When people cook, bake, and serve foods and beverages, they must measure and calculate amounts.

Lance and his brother were helping their parents prepare a meal for a family party. The boys were in charge of making the punch. This is the recipe they used.

- 2 L orange juice
- 75 mL lemon juice
- 2 cans ginger ale (355-mL cans)
- 1 can soda water (355-mL can)

How much punch did they make in all? Give your answer in millilitres.

If there were ten guests at the party, how much punch did each guest get?

Step 1: Understand the problem.

You need to find the total millilitres of punch the boys made. You also need to find how much punch each guest got.

Step 2: Make a plan. (Choose a strategy.)

Find how many millilitres of each ingredient were used. Add the amounts together to get the total amount of punch.Then divide the total of all the ingredients by 10 (the number of guests at the party) to find how much punch each person got.

Step 3: Try the plan.

9. How much of each of these ingredients is needed in the punch? Remember, you must change litres to millilitres.

a. orange juice: ____________ mL **b.** lemon juice: ____________ mL

c. ginger ale: ____________ mL **d.** soda water: ____________ mL

10. Find the total amount of ingredients by adding.

How much punch did the boys make? ____________ mL

11. Divide the total by 10.

How much punch did each guest get? ____________ mL

Step 4: Look back.

12. a. Do the answers seem reasonable? ____________

b. Do you think each guest got enough punch to drink? ____________

Check your answers in the Appendix.

If you look through newer cookbooks in your home or in the library, you will discover that the ingredients are often listed in millilitres (mL). Even dry ingredients (such as sugar and flour) are shown in millilitres.

124 mL sugar

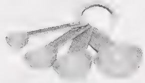
500 mL flour

250 mL milk

15 mL baking powder

13. What is the best way to measure each of these ingredients? Circle your answer.

a. 500 mL flour


Measuring spoon (marked in mL)

Measuring cup (marked in mL)

b. 15 mL baking powder

Measuring spoon (marked in mL)

Measuring cup (marked in mL)

c. 125 mL flour

Measuring spoon (marked in mL)

Measuring cup (marked in mL)

Check your answers in the Appendix.

Mental Math

Making Groups of 100

Find the total of these liquid ingredients quickly in your head by **making groups of 100**. To do this, find the pairs of numbers that equal 100.

$$\mathbf{25\ mL} + 50\ \text{mL} + \mathbf{75\ mL} + 150\ \text{mL} =$$

100 mL

Another pair of numbers will give you a multiple of 100.

200 mL

25 mL + **50 mL** + 75 mL + **150 mL** =

Now, you can easily add the groups of 100.

100 mL + 200 mL = 300 mL

14. Add these liquid ingredients quickly in your head by making groups of 100 or multiples of 100.

a. 25 mL + 175 mL + 50 mL + 50 mL = ___________ mL

b. 125 mL + 200 mL + 75 mL = ___________ mL

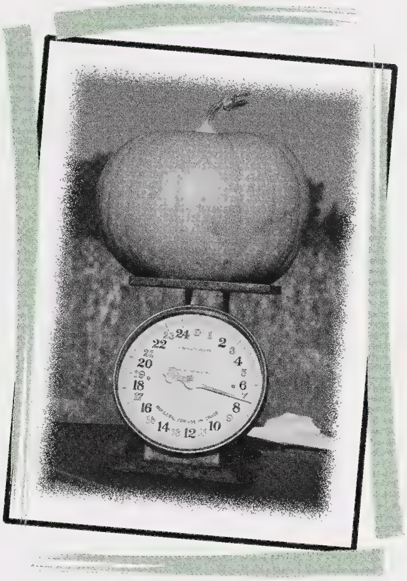
c. 150 mL + 50 mL + 25 mL + 75 mL = ___________ mL

d. 175 mL + 150 mL + 50 mL + 25 mL = ___________ mL

Check your answers in the Appendix.

Turn to Assignment Booklet 7C, and complete the activities for Day 20.

Learning About Mass



Jenna and Richelle enjoyed learning about capacity. They were excited to learn more, so they asked their parents for new ideas about measuring. One of the new measuring words their parents mentioned was mass.

What Is Mass?

Hold your textbook in one hand and your centimetre ruler in the other hand. You will notice that the textbook feels heavier. When you think of one object being heavier than another, you are really thinking about **mass**.

Mass is measured by the weight of an object.

The mass of your textbook is greater than the mass of the ruler because the textbook weighs more than the ruler.

1. Think of **four** objects in your room that have mass. List them here.

- ____________________
- ____________________
- ____________________
- ____________________

Check your answer in the Appendix.

Tools for Measuring Mass

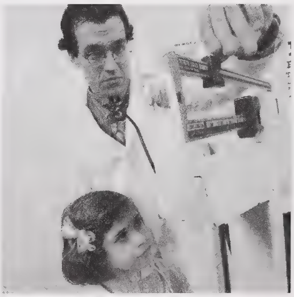
A measuring tool called a **scale** is used to measure mass. There are many different types of scales. Vehicles with very large masses, such as big trucks, are **weighed** on large highway scales. Small amounts, such as medicines, are weighed on very accurate electronic scales or balance scales.

Spring scale

Balance scale

Electronic scale

Bathroom scale


Doctor's scale

2. Which type of scale would you use to measure each of the following masses?

   a. your weight ______________________________

   b. a bag of fruit ______________________________

   c. a fish ______________________________

Check your answers in the Appendix.

How Is Mass Measured?

Look in your kitchen cupboard or refrigerator for packages of food like a bag of sugar, a package of macaroni, or a tub of margarine. Check the labels for the numbers that measure the contents of the packages.

Whole Kernel Corn
Maïs à grains entiers
1 kg
Whole Kernel Corn
Maïs à grains entiers
NIBLETS
Green Giant
Géant Vert
PEACHES & CREAM · DEUX COULEURS

Most packages of food are marked in units like this.

kg **g**

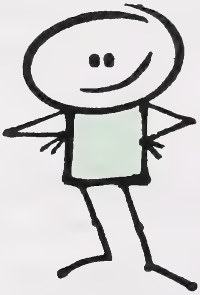
Kilograms (kg) and grams (g) measure mass.

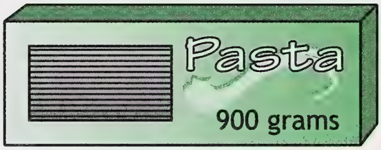
3. Choose **four** food packages from your cupboard or fridge. List them here. Write the masses that are shown on the labels.

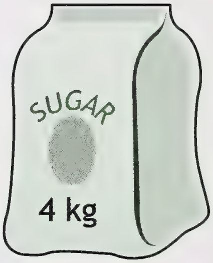
- ______________________
- ______________________
- ______________________
- ______________________

Check your answers in the Appendix.

Smaller packages of food are measured in grams. The numbers on these packages are large. For example, a package of pasta might measure 900 g.







Larger packages tend to be measured in kilograms. The numbers on these packages are quite small. For example, a bag of sugar might measure 4 kg.

4. Which unit do you think is larger, a gram or a kilogram? Explain your thinking.

____

____

____

Check your answer in the Appendix.

Kilograms and grams are related units. To see how they are related, think about the way other measurements are related.

Remember: 1 km = **1000** m
1 L = **1000** mL

5. Think about what you know about other measurements. How many grams do you think are in 1 kg?

____

Check your answers in the Appendix.

When you walk through a supermarket, you will notice that many items are priced according to their mass or weight. Following are some examples of prices you might see when you buy groceries.

Peanuts: 79¢ per kilo
Grapes: $1.49 per kg
Sliced Ham: $0.89 per 100 g

6. What do you think *kilo* means?

____

7. Think of one other item in a supermarket that is usually measured in kilograms. Write it here: ______________________________

Check your answers in the Appendix.

How Heavy Is 1 kg?

Here is an easy way to discover how heavy a kilogram is.

Find the 1-L container that you used in the lessons on capacity. Fill the container with water until it is level with the 1-L mark. **Do not overfill it.** Hold the container and feel its weight. You are holding a mass of 1 kg.

Hold other objects that you find in your room. How do their masses compare to the mass of the 1-kg container?

8. List **three** objects that you find in your home. Hold them in one hand while holding your 1-kg container in the other hand. Does the object weigh more than 1 kg or less than 1 kg?

Object	More Than or Less Than 1 kg?

9. Place the following objects in order from the smallest mass to the largest mass.

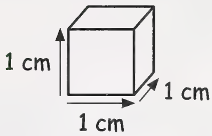
- a bag of potatoes
- a tea bag
- a tomato

________________ Smallest mass ________________ ________________ Largest mass

Check your answers in the Appendix.

Looking at Grams

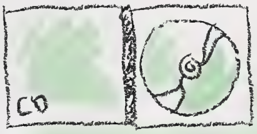
A **gram** is a very small unit of mass. Imagine filling a centimetre cube with water and weighing it. The cube would weigh 1 g.



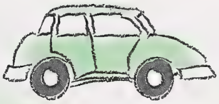
You have already discovered that 1 L of water weighs 1 kg. It would take 1000 g or 1000 centimetre cubes of water to equal 1 kg.

Remember: Large units (kilograms) measure the mass of larger things.
Small units (grams) measure the mass of smaller things

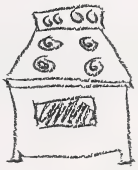
10. Circle the objects that should be measured in kilograms.



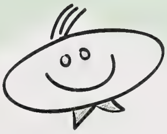
Compact disc



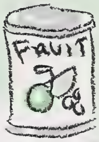
Automobile



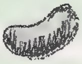
Stove



Nine-year-old student

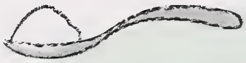


Small can of fruit

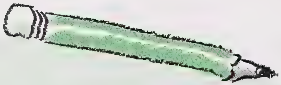


Bean

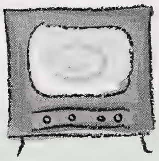
11. Which of these objects should be weighed in grams? Circle the answers.



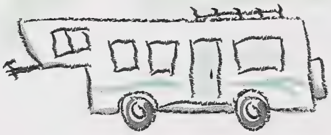
Spoonful of sugar



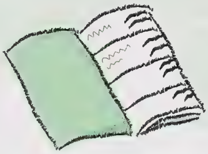
Pencil



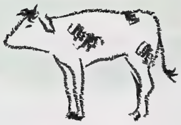
Television



Holiday trailer



Address book



Calf

Check your answers in the Appendix.

Estimating Mass

Estimation is a skill that you will use in many areas of your life:

- You will need to estimate mass when you buy groceries.
- You may need to estimate mass when you put things in a box so that the box is not too heavy to carry.
- You may need to estimate mass when you stack books on a shelf or when you load a trailer with garbage to go to the landfill. You don't want the shelf to break or the trailer to be overloaded.

Try estimating mass! You may need help from your home instructor as you work through this activity.

12. Find **four** different objects in your home that have a mass greater than 1 kg. Make sure you can carry each object easily.

Think about the mass of each object as you hold it. The write the names of the objects in order from the smallest mass to the largest mass. Include your estimate of the mass of each object on your list.

Object	Estimated Mass
	________ kg
	________ kg
	________ kg
	________ kg

Check your answers in the Appendix.

Measuring Kilograms!

You will need a bathroom scale that measures objects in kilograms for this activity.

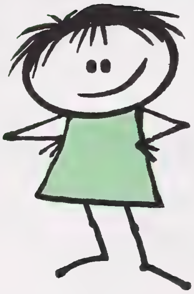
13. Use the scale to weigh each object in your list from question 12. Measure to the closest whole kilogram. (Do not use decimals.)

Object	Actual Mass

14. a. How close were your estimates to the actual mass of the objects?

b. For which object was your estimate closest to the actual mass of the object?

Check your answers in the Appendix.



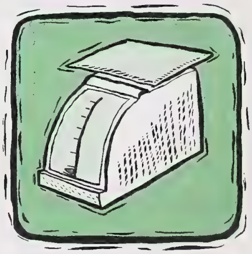
If you had difficulty estimating accurately, try questions 12 and 13 again using different objects. Compare your objects to the mass of 1 L of water (1 kg). Then estimate the mass of the objects. Later, check your estimates carefully with your actual measurements.

Estimating and Measuring Grams

You may need help from your home instructor to complete this activity.

You will need to use a kitchen scale that measures in grams and kilograms to complete this measuring activity.

15. Find **three** small objects that you think weigh less than 1 kg. Hold each one in your hand. Estimate which one has the smallest mass and then estimate which one has the largest mass.



a. Write the objects in order from smallest to largest mass.

Object	Mass (in grams)
(smallest)	
(largest)	

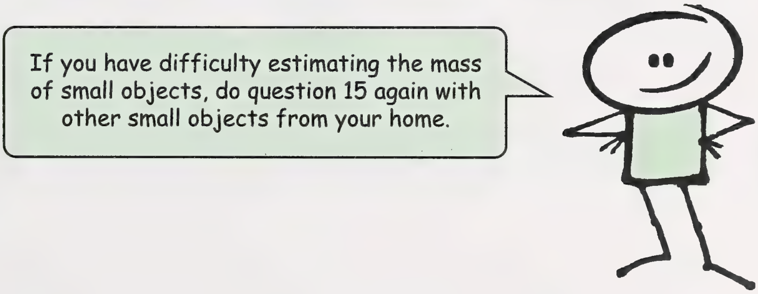
b. Place each object on the kitchen scale. Record the measurement of each object in grams on the chart.

16. Were your estimates correct?

____

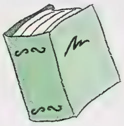
____

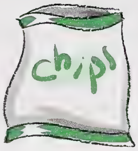
Check your answers in the Appendix.


If you have difficulty estimating the mass of small objects, do question 15 again with other small objects from your home.

17. Which object in each of these pairs has the largest mass? Circle the answer.

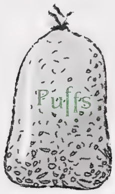
a.

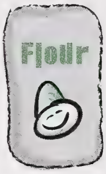




a hardcover library book or a small bag of potato chips

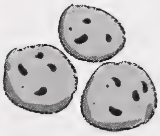
b.

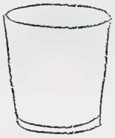




a bag of puffed wheat cereal or a large bag of flour

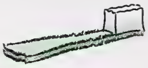
c.

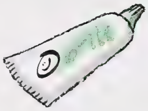




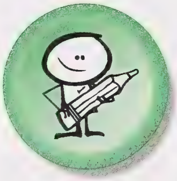
3 small cookies or a glass of milk

d.





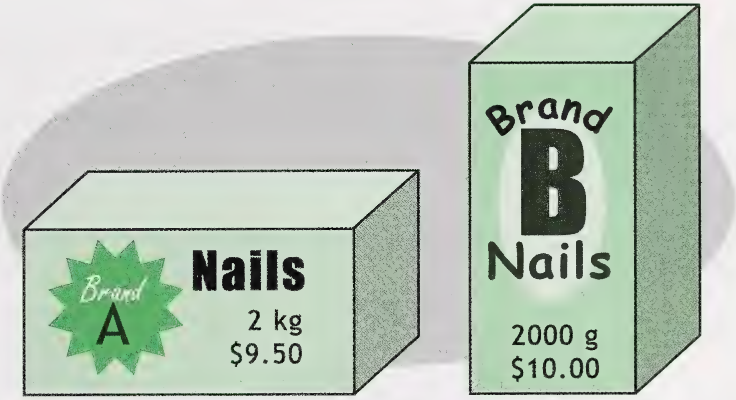
a toothbrush or a tube of toothpaste



Check your answers in the Appendix.

Turn to Assignment Booklet 7C, and complete the activities for Day 21.

Comparing Kilograms and Grams



Jenna and Richelle were asked to go to the hardware store to buy nails for their father. The girls were supposed to find the best buy. When they arrived at the store, they found two boxes of nails on the shelf. One box of nails was labelled in kilograms. The other box was labelled in grams.

How could the girls figure out the best buy?

Brand A nails cost $9.50 for 2 kg. Think of 2 kg as 2000 grams. This means that Brand A nails cost $9.50 for 2000 g.

Brand B nails cost $10.00 for 2000 g.

1. Which is the better buy, Brand A nails or Brand B nails? Explain your thinking.

____

____

____

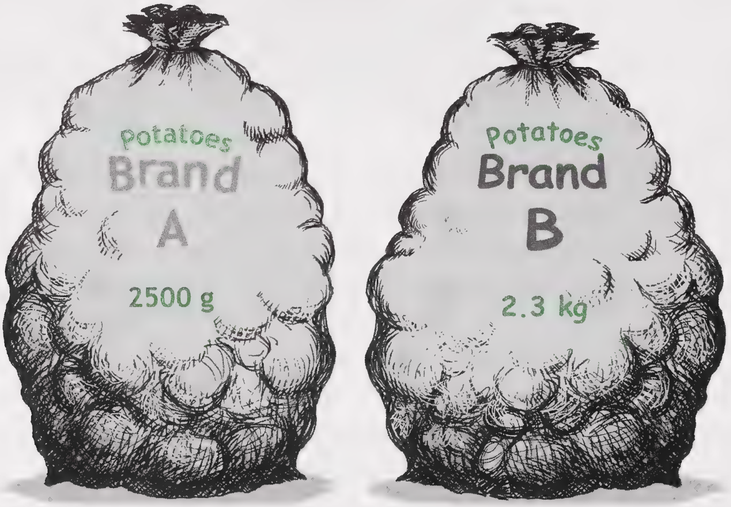
____

Check your answers in the Appendix.

Kilograms and grams are related units. One kilogram is the same as 1000 g.

To compare the mass of two objects, it may be necessary to change kilograms into grams or grams into kilograms. You may also need to use decimal numbers. Remember what you have learned about moving the decimal to the right or left.

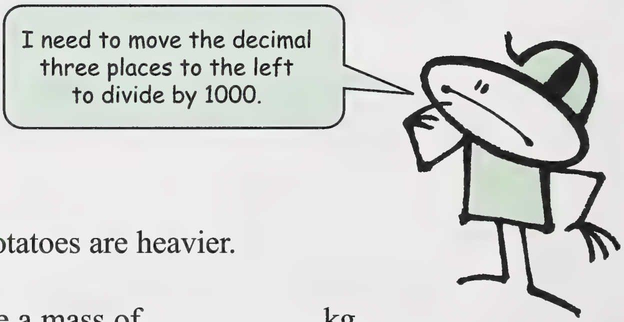
In the following example, which sack of potatoes is heavier?


Potatoes
Brand
A
2500 g
Potatoes
Brand
B
2.3 kg

$$\text{g} \xrightarrow{\qquad} \text{kg}$$

$$2500\text{ g} \div 1000 = 2.5\text{ kg}$$

2.500.   2.5


I need to move the decimal three places to the left to divide by 1000.

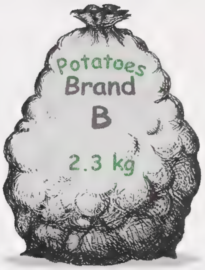
2. **a.** Brand ____________ potatoes are heavier.

b. Brand A potatoes have a mass of ____________ kg.

Check your answers in the Appendix.

Kilograms can be changed to grams in the same way. This time the decimal will move to the right.

How many grams do the Brand B potatoes weigh?



$\text{kg} \longrightarrow \text{g}$

$2.3\ \text{kg} \times 1000 = 2300\ \text{g}$

$\underset{\curvearrowright}{2.3\ \square\ \square}$ $\quad$ $2.\underset{\curvearrowright}{300}.$

3. Brand B potatoes weigh ____________ g.

Check your answer in the Appendix.

Change kilograms to grams to find the answers to the following questions.

4. Which mass in each pair is larger? Circle the answer.

a. 1 kg or 2000 g

b. 2.5 kg or 2000 g

c. 4000 g or 3 kg

5. Which mass in each pair is smaller? Circle the answer.

a. 250 g or 2.5 kg

b. 10 kg or 100 g

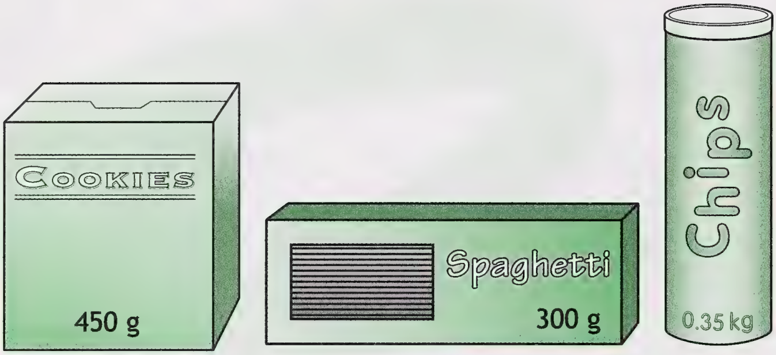
c. 1 kg or 1100 g

Check your answers in the Appendix.

Ordering Mass

To compare the weight of several objects that are measured in different units, you may need to change some of the units.

Can you put these items in order from heaviest to lightest?



The mass of the cookies and spaghetti is measured in grams. You need to change the mass of the chips to grams to be able to compare the three products.

$$0.35\,\text{kg} \times 1000 = 350\ \text{g}$$

0.35 350

6. Now you can put the products in order.

________________ ________________ ________________

Heaviest Lightest

Check your answer in the Appendix.

7. Compare the following weights. List them from lightest to heaviest.

a. 1000 g 600 g 2 kg

________________ ________________ ________________

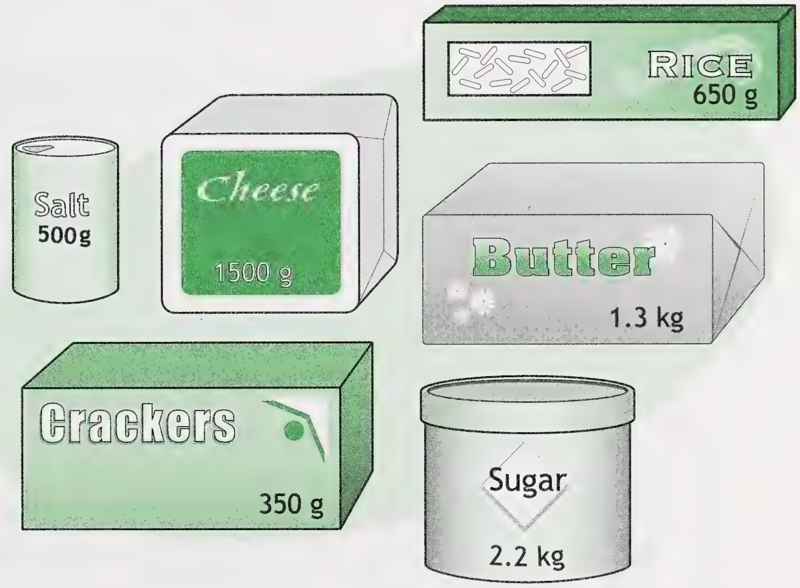
Lightest Heaviest

b. 2000 g 1 kg 1200 g

____________ Lightest ____________ ____________ Heaviest

Check your answers in the Appendix.

8. Look at the mass of each of the following items.


RICE
650 g
Salt
500g
Cheese
1500 g
Butter
1.3 kg
Crackers
350 g
Sugar
2.2 kg

a. Which items weigh more than 1 kg?

____

b. Which two items have a total mass of 1000 g when added together?

____

c. What is the total mass in kilograms of the butter, cheese, and sugar?

____

d. What is the total mass of the butter, cheese, and sugar in grams?

____

e. Write the items in order from lightest to heaviest.

Lightest ______________________________

____

____

____

____

Heaviest ______________________________

Check your answers in the Appendix.

Problem Solving

More Problems Involving Mass

Solve the following word problems. Change kilograms to grams to help you solve each problem. Write the answer in a sentence.

9. Lucie bought 1 kg of ice cream for her party. After the party, there were 440 g of ice cream left. How much ice cream was eaten at the party?

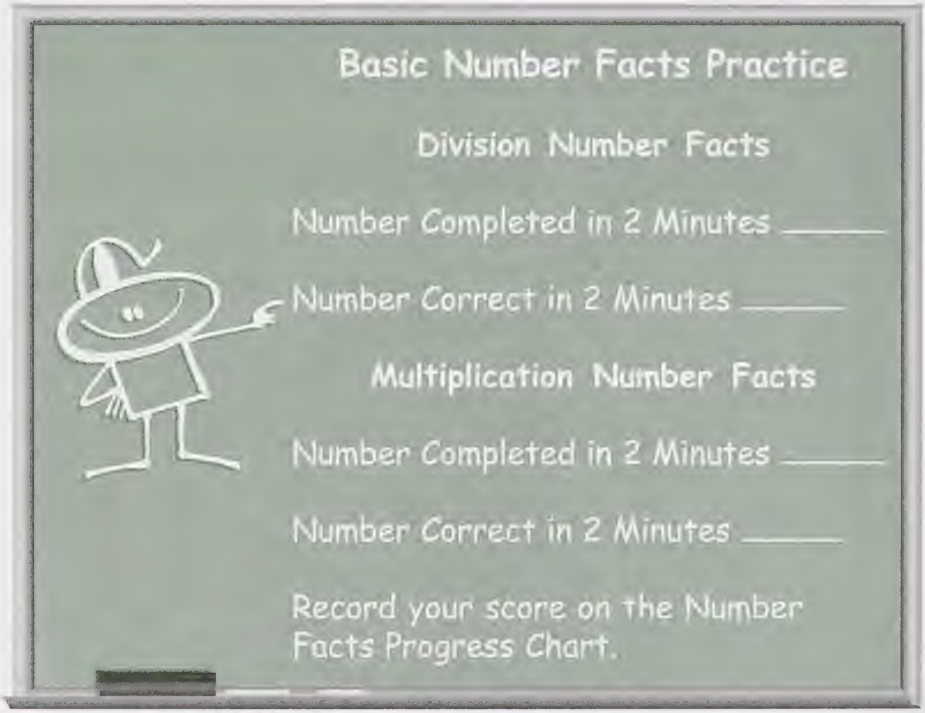
10. Dan bought a 5-kg bag of potatoes on Saturday. On Monday, only 1380 g of potatoes remained in the bag. What was the mass of the potatoes that were used?

Check your answers in the Appendix.

120
140
160
80
60
40

Basic Number Facts Practice

Ask your home instructor to time you as you complete the following exercises. Your goal is to complete all 25 questions in each exercise in 2 minutes. At the end of 2 minutes, count up how many questions you were able to complete. Write this number in the chart below. Then use the answer key in the Appendix to mark the exercise, and record your score in the space provided. Before you move on, go back and complete any questions you did not finish during the 2 minutes. Mark these questions using the answer key as well.



Basic Number Facts Practice

Division Number Facts

Number Completed in 2 Minutes ______

Number Correct in 2 Minutes ______

Multiplication Number Facts

Number Completed in 2 Minutes ______

Number Correct in 2 Minutes ______

Record your score on the Number Facts Progress Chart.

11. Division Number Facts

Timed Exercise: 2 minutes

$9\overline{)72}$ $5\overline{)45}$ $6\overline{)36}$ $9\overline{)54}$ $7\overline{)49}$

$64 \div 8 =$ $35 \div 7 =$ $27 \div 9 =$ $48 \div 8 =$ $40 \div 5 =$

$9\overline{)36}$ $8\overline{)24}$ $4\overline{)20}$ $8\overline{)32}$ $2\overline{)18}$

$42 \div 7 =$ $48 \div 6 =$ $56 \div 7 =$ $15 \div 5 =$ $24 \div 4 =$

$7\overline{)21}$ $6\overline{)30}$ $4\overline{)36}$ $7\overline{)63}$ $7\overline{)28}$

Check your answers in the Appendix.

STOP

12. Multiplication Number Facts
Timed Exercise: 2 minutes

$$\begin{array}{r} 6 \\ \times\ 5 \\ \hline \end{array} \qquad \begin{array}{r} 4 \\ \times\ 9 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times\ 9 \\ \hline \end{array} \qquad \begin{array}{r} 3 \\ \times\ 8 \\ \hline \end{array} \qquad \begin{array}{r} 4 \\ \times\ 7 \\ \hline \end{array}$$

$9 \times 5 =$ $\qquad$ $8 \times 3 =$ $\qquad$ $8 \times 8 =$ $\qquad$ $5 \times 7 =$ $\qquad$ $9 \times 8 =$

$$\begin{array}{r} 5 \\ \times\ 5 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times\ 6 \\ \hline \end{array} \qquad \begin{array}{r} 7 \\ \times\ 7 \\ \hline \end{array} \qquad \begin{array}{r} 9 \\ \times\ 7 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times\ 8 \\ \hline \end{array}$$

$2 \times 9 =$ $\qquad$ $3 \times 5 =$ $\qquad$ $7 \times 8 =$ $\qquad$ $3 \times 9 =$ $\qquad$ $4 \times 8 =$

$$\begin{array}{r} 8 \\ \times\ 9 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times\ 4 \\ \hline \end{array} \qquad \begin{array}{r} 9 \\ \times\ 9 \\ \hline \end{array} \qquad \begin{array}{r} 5 \\ \times\ 8 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times\ 7 \\ \hline \end{array}$$

Check your answers in the Appendix.

Turn to Assignment Booklet 7C, and complete the activities for Day 22.

Learning About Money

BANK OF CANADA – BANQUE DU CANADA
VINGT 20 TWENTY
DOLLARS
CANADA
20
10
5

Money is used almost every day by most people. It is used to buy clothing and groceries, to pay for gasoline, and to do banking.

You probably know how to use and count money. You may have an allowance or you may have saved enough money to buy something special.

In today's lesson you will review what you know about counting money. You will also practise solving problems that involve money.

You will need a collection of coins for this lesson. If you do not have real coins, turn to Day 23 in the Cut-Out Learning Aids section of the Appendix. Cut out the coins and bills. Use your coin collection to help you answer the following questions.

1. a. How many pennies make one nickel? ____________

b. How many pennies make one dime? ____________

CENT
1998
CANADA

c. How many pennies make one quarter? ____________

d. How many pennies make one dollar? ____________

2. a. How many nickels make one dime? ____________

CANADA
1998

b. How many nickels make one quarter? ____________

c. How many nickels make one dollar? ____________

Check your answers in the Appendix.

3. a. How many dimes make one dollar? ____________

b. How many quarters make one dollar? ____________

4. a. How many one-dollar coins (loonies) make one ten-dollar bill?

____

b. How many loonies make one 20-dollar bill?

____

5. **a.** How many two-dollar coins make one ten-dollar bill?

____

b. How many two-dollar coins make one 20-dollar bill?

____

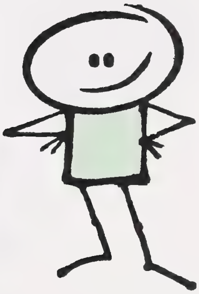
Check your answers in the Appendix.

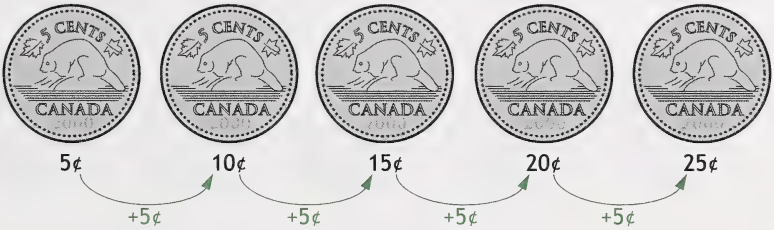
Counting Money

Skip counting is very useful when you are counting money.

If you are counting nickels, skip count by 5. If you are counting dimes, skip count by 10.

Skip count to find the value of the following coins.



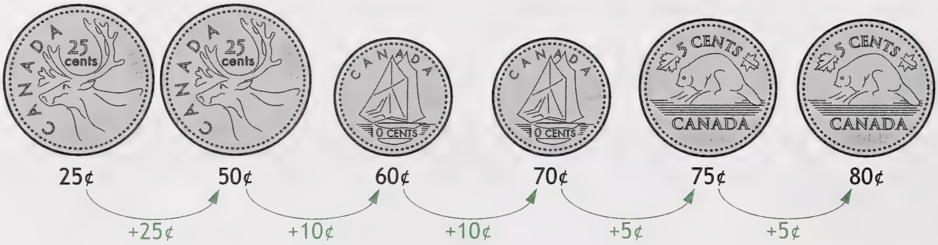


6. **a.** If you are counting quarters, skip count by ____________.

b. If you are counting two-dollar coins, skip count by ____________.

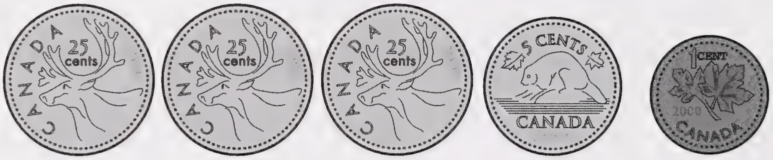
Check your answers in the Appendix.

When there are many different kinds of coins in a collection, switch from one type of skip counting to another. It is best to count the coins with the largest value first.


25¢
50¢
60¢
70¢
75¢
80¢
+25¢
+10¢
+10¢
+5¢
+5¢

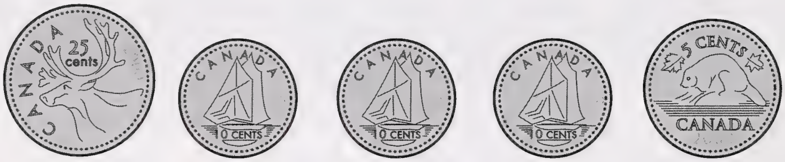
7. Use skip counting to find the value of the following coin collections.

a.



________ ________ ________ ________ ________

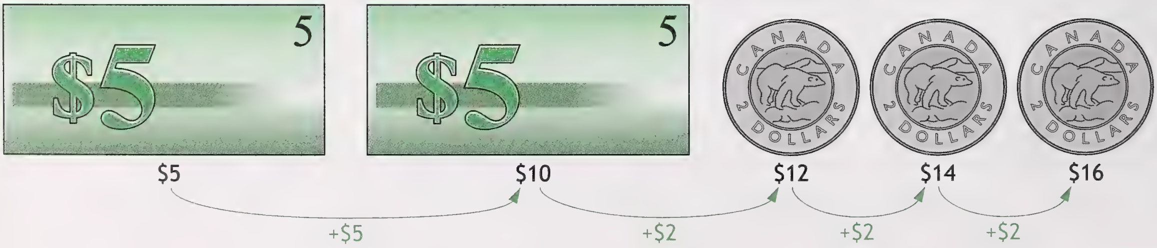
b.



________ ________ ________ ________ ________

Check your answers in the Appendix.

You can count bills and coins in the same way.


$5
$10
$12
$14
$16
+$5
+$2
+$2
+$2

Coin Collections to $1

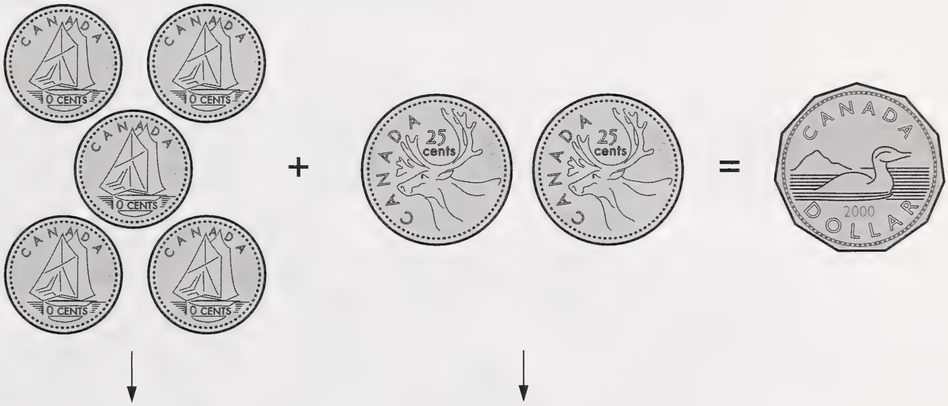
One hundred one-cent coins (pennies) make up $1.

$$100 \times 1¢ = 100¢ \text{ or } \$1$$

You can also use groups of different coins to make up $1.

Example

$$(5 \times 10¢) + (2 \times 25¢) = \$1$$


CANADA
10 CENTS
+
25 cents
CANADA
=
CANADA
2000
DOLLAR

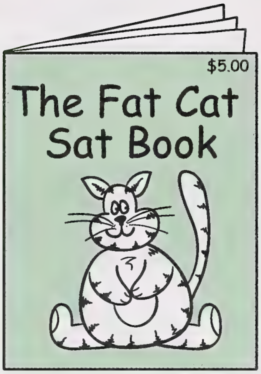
50¢ + 50¢ = $1

8. Use your coin collection to find other groups of coins that you can use to make $1.

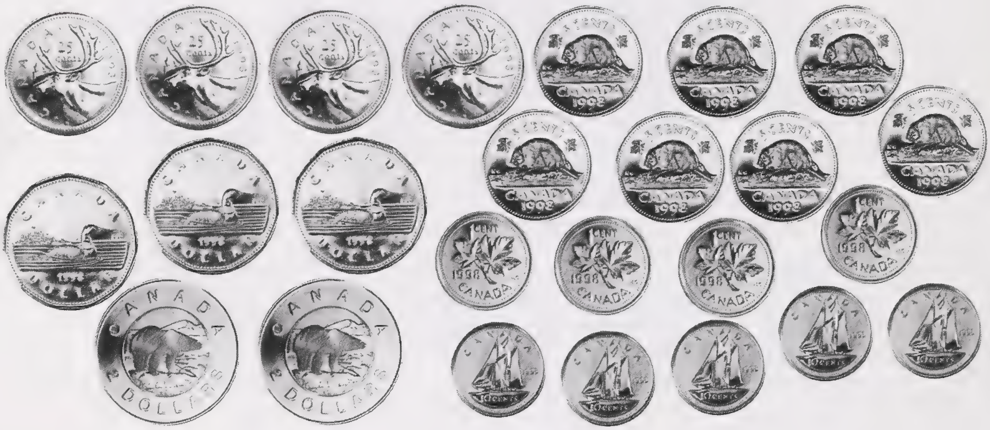
- ______________________________
- ______________________________
- ______________________________

Check your answers in the Appendix.

Coin Collections to $5


$5.00
The Fat Cat Sat Book

You would like to buy a book that costs $5. This is the collection of coins you have in your pocket.



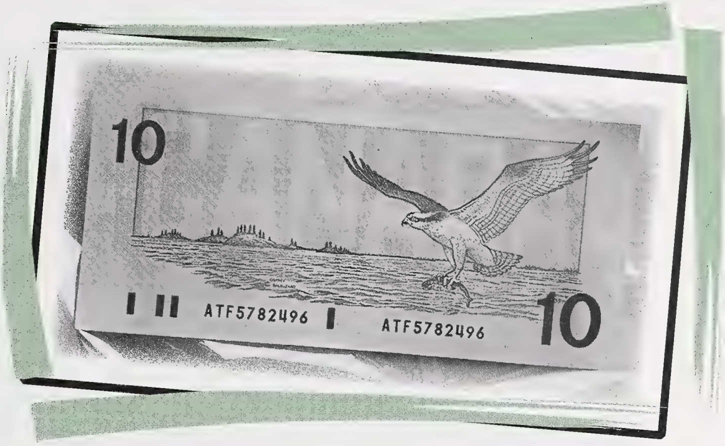
9. Do you have enough money to buy the book? ____________________

10. Find two different goups of coins that you could use to pay for the book.

- ____
- ____

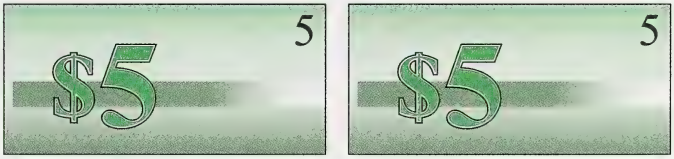
Check your answers in the Appendix.

Counting Coins and Bills

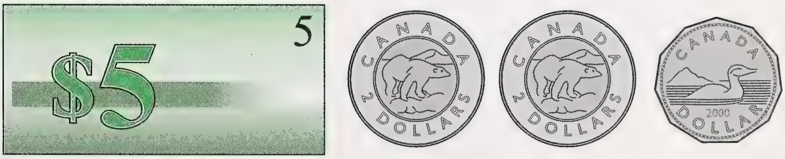

10
ATF5782496
ATF5782496
10

The bills that are used most often in Canada are the five-dollar bill, the ten-dollar bill, and the 20-dollar bill. Larger bills, such as the 50-dollar bill and the 100-dollar bill are also used.

What combinations of coins and bills could you use to pay $10 for an item?



$5 + $5 = $10


5
$5
CANADA
2 DOLLARS
CANADA
2 DOLLARS
CANADA
2000
DOLLAR

$5 + $2 + $2 + $1 = $10

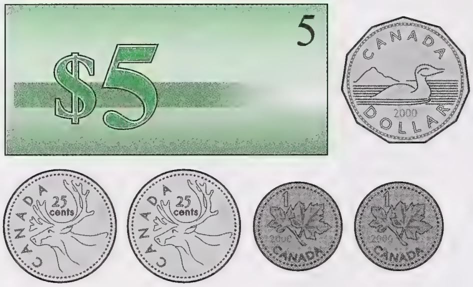
11. What combinations of bills or coins can you use to make $20?

- ______________________________
- ______________________________

Check your answers in the Appendix.

12. Count the following collections and write the total amount. An example is done for you.

Example


5
$5
CANADA
2000
DOLLAR
25 cents
CANADA
25 cents
CANADA
1
CANADA
1
CANADA

Begin by adding the dollars.

$$\$5 + \$1 = \$6$$

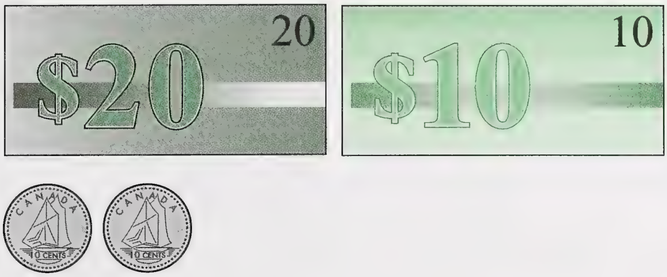
Then add the coins.

$$25¢ + 25¢ + 1¢ + 1¢ = 52¢$$

You then add to get the total.

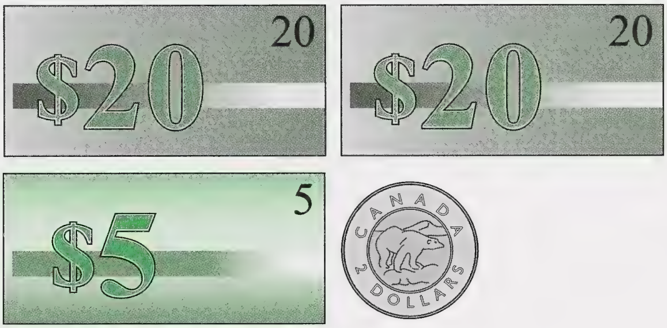
$$\begin{array}{r} \$6.00 \\ 0.52 \\ \hline \$6.52 \end{array}$$

a.


20
$20
10
$10
CANADA
10 CENTS
CANADA
10 CENTS

____

b.


20
$20
20
$20
5
$5
CANADA
2 DOLLARS

____

Check your answers in the Appendix.

Problem Solving with Coins

Use your coin collection to help you find the answers to the following questions.

13. a. You have 35¢ in dimes and pennies. How many of each type of coin do you have?

Dimes: __________ Pennies: __________

b. How many quarters make up $2.50? __________

c. How many nickels would you need to give your friend 55¢?

____

d. How much money do you have if you find three quarters, five dimes, four nickels, three pennies, a two-dollar coin, and a one-dollar coin in your wallet?

Check your answers in the Appendix.

When you add or subtract money over $1, you are working with decimal numbers. Remember what you have learned about doing calculations with decimal numbers.

14. You are buying a ticket to a hockey game. The ticket costs \$14.50. You pay for the ticket with a 20-dollar bill. How much money will you get back?

This is really a subtraction problem.

$$\begin{array}{r} \$20.00 \\ -\ 14.50 \\ \hline \end{array}$$

You will get __________ back.

Check your answer in the Appendix.

15. Try another word problem.

Jenna bought two paintbrushes and a can of paint to help her parents finish decorating their living room. Each paintbrush cost $3.65. The paint cost $15.49.

How much money did Jenna spend?

a. What two operations do you need to do to calculate the answer?

______________________________ and ______________________________

b. Do the calculations below.

Jenna spent ____________.

Check your answers in the Appendix.

For more practice with money problems, visit the following website:

http://www.mathstories.com

Turn to Assignment Booklet 7C, and complete the activities for Day 23.

More About Money

Let's Go Shopping!

Do you remember the last time you went shopping in a store? You might have bought a snack and a soft drink. Perhaps you bought some supplies for school. You likely used coins or bills to buy the items. You may have received change after making your purchase.

Did you know that you were using math operations all the time you were shopping?

What four math operations are used all the time?

1. Complete the list of the four math operations. The first one is done for you.

- **adding**
- ______________________
- ______________________
- ______________________

Check your answers in the Appendix.

2. a. What operation would you use to calculate how much a snack and soft drink cost?

____

b. You had a 20-dollar bill. You paid \$3.50 for six pencils, a pen, and three notebooks. What operation would you use to find out how much change you would get?

____

c. The notebooks cost 50¢ each. What operation would you use to find the cost of three notebooks?

____

d. If the pencils were on sale at six for 48¢, what operation would you use to find the cost of one pencil?

____

Check your answers in the Appendix.

Remember the following important clues when solving problems involving money.

- When a question asks you to find a total amount or how much something would cost altogether, use **addition**.
- When you need to find the change or amount remaining, use **subtraction**.
- When you are asked to find the total cost of several items of the same price, use **multiplication**.
- When you know the total price of a group of items and want to find the cost per item, use **division**.

3. Read the data in the following chart and then use the information to answer the questions on the next page. Show your calculations and write each answer in a sentence.

Item	Cost
Hot Dog	$1.60
Hamburger	$2.50
Salad Plate	$1.80
Milk	$0.55
Cookie	$0.44
Juice (355 mL)	$1.00

a. How much will it cost to buy hot dogs and juice for yourself and three friends?

b. You have $20. How much change will you get after buying hot dogs and juice for yourself and your freinds?

c. How many juice boxes can you buy for $20?

Check your answers in the Appendix.

Counting Change

Your home instructor or an older family member should help you practise counting change. Use your collection of coins and bills to do this activity.

Pretend that the home instructor is the buyer and you are the cashier. As you work through each example, count out loud to make the correct change.

Example 1

A toy costs $5. Your home instructor pays with a ten-dollar bill. You need to give back $5 in change.

Count out $5 worth of change. Start counting at the **price** of the item your home instructor bought. Finish counting when you reach the amount you were paid.

Start at the price of the item ($5).

$5.00 → Give back one dollar. → Say, "$6."
Give back another dollar. → Say, "$7."
Give back another dollar. → Say, "$8."
Give back another dollar. → Say, "$9."
Give back another dollar. → Say, "**$10**."

Finish at the amount you were paid ($10).

You counted $5 in change. You could also have given back one five-dollar bill, rather than five one-dollar coins. This would have been a faster way to make change.

Example 2

Your home instructor is buying a book for $3.95 and is paying you with a five-dollar bill.

Count out the change. Start at $3.95. Count coins to the nearest whole dollar first.

$3.95 → Give back 5¢. → Say, "$4."

Give back $1. → Say, **"$5."**

The total amount of change is 5¢ + $1 (or $1.05).

4. Count out the change for each problem with your home instructor. Then fill in the blanks as you count the change.

a. Start at $5.50. Count coins up to the nearest whole dollar first. Then continue counting dollars. Finish at $20.00.

$5.50 → Give back __________ cents. Say, "$ **6** ."

Give back __________. Say, "$__________."

Give back __________. Say, "$__________."

Give back __________. Say, "$__________."

Give back __________. Say, "$__________."

Give back __________. Say, "$ **20** ."

b. What is the total amount of change you gave back? __________

5. a. Start at $25.45. Count coins up to the nearest whole dollar first. Then continue counting dollars. Finish at $50.00.

$25.45 ⟶ Give back ____________ cents. Say, "$ **25.50** ."

Give back ____________ cents. Say, "$ **26.00** ."

Give back ____________. Say, "$____________."

Give back ____________. Say, "$____________."

Give back ____________. Say, "$____________."

Give back ____________. Say, "$____________."

Give back ____________. Say, "$____________."

Give back ____________. Say, "$ **50.00** ."

b. What is the total amount of change you gave back? ____________

Check your answers in the Appendix.

Estimating

It is useful to know how to estimate large amounts of coins.

- You might have a pocket full of coins and need to decide quickly if you have enough money to buy your lunch.
- You might collect spare pennies in a jar. You must roll them in coin wrappers before you take them to the bank. You need to know how many coin wrappers to get for all the pennies.

You will need a cup of pennies for this activity. Ask your home instructor, a friend, or a parent to help you gather a large amount of pennies.

6. **a.** Look at your cup full of pennies.

Estimate how many pennies are in the cup. ____________

b. Now count the pennies.

How many pennies are in the cup? ____________

c. Was your estimate close? ____

Check your answers in the Appendix.

Find an empty jar. Try to fill it with pennies. If you don't have enough pennies to fill the jar, you will have to imagine that it is full of pennies!

7. **a.** Think about how many pennies would fit in the cup. Look at the size of the jar. Estimate how many pennies will fit in the jar. ____________

b. Now think about the cup and the jar. Explain how you estimated the number of pennies in the jar.

____

____

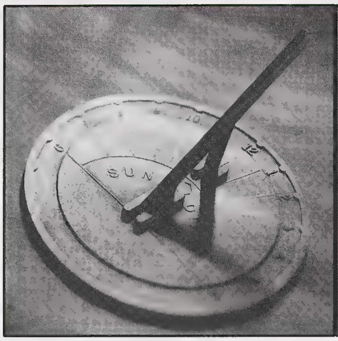
Check your answers in the Appendix.

Read about an interesting money problem at this website:

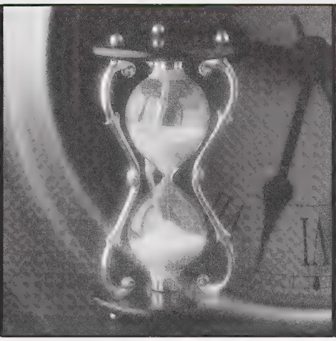
http://math.rice.edu/~lanius/pro/rich.html

Turn to Assignment Booklet 7C, and complete the activities for Day 24.

It's About Time!



Sundial



Hourglass

Clock

Time has always been important to people. Time tells the following things:

- when to work, eat, and rest
- how old someone is
- when events happen

In early times people kept track of time by watching the seasons, the sun, and the moon. People noticed that the day could be divided into mornings, afternoons, and evenings. They watched the sun come up and noticed how the shadows changed during the day.

People once measured time at night by lighting a candle with marks down the side. The marks measured time as the candle burned.

People invented better ways to tell time. Calendars were made to keep track of months and years. Different kinds of clocks were made to keep track of seconds, minutes, and hours.

In today's lesson you will learn more about the units used to measure time.

What Do You Know About Time?

There are many units for measuring different lengths of time.

For example, a **second** is a very small unit of time. There are 60 seconds in 1 **minute**. A minute is another unit of time.

1. How many units for measuring time do you know? Use the following words to fill in the blanks.

century decade hours millennium minutes months

a. A day has 24 of these. ______________________

b. A year has 12 of these. ______________________

c. Sixty of these units pass in one hour. ______________________

d. Ten years make one of these. ______________________

e. In this unit there are 100 years. ______________________

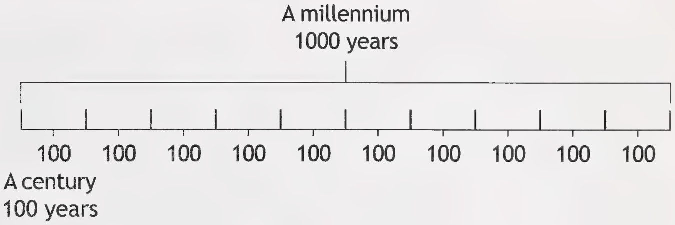
f. January 1, 2001, is the start of a new one of these. ______________

Check your answers in the Appendix.

Large Units of Time

A very large unit of time is a **millennium**. A millennium is made up of 1000 years.

January 1, 2001, was the beginning of a millennium. The last millennium began in the year 1001.


A millennium
1000 years
100
100
100
100
100
100
100
100
100
100
A century
100 years

Each period of **100 years** is called a century. There are ten centuries in a millennium.

The years between January 1, 1801, and December 31, 1900, are called the nineteenth century.

The years between January 1, 1901, and December 31, 2000, are called the twentieth century.

2. a. A woman is 95 years old. How many more years will it be before she can say she has lived for a century? ____________

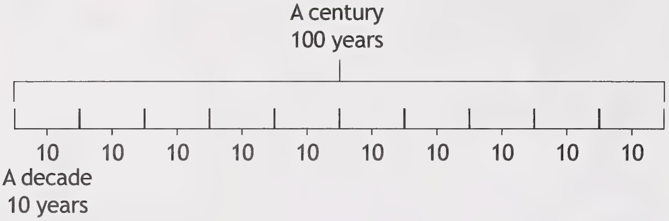
b. The printing press was invented more than three centuries ago. About how many years is this? ____________

c. The third millennium began in 2001. In what year will the fourth millennium begin? ____________

d. Kari's great-grandfather came to Canada in the first year of the twentieth century. What year was this? ____________

Check your answers in the Appendix.

Another unit of time is the **decade**. Each period of ten years is called a **decade**.



There are ten decades in a century. The first decade of the twentieth century means the years between January 1, 1900, and December 31, 1909. The second decade of the twentieth century means the years between January 1, 1910, and December 31, 1919.

3. **a.** Grandpa Dan has lived for eight decades. How many years is this?

____

b. How many decades are there in two centuries? ____________

c. In which decade of the twentieth century were you born? ____________

Check your answers in the Appendix.

Learning About Years, Months, and Days

Each decade is divided into ten years. Each of those years is divided into months.

One year has 12 months.

JANUARY 2001

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 New Year's Day	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

4. Write the names of the months in order, starting with January.

March
December
January
September
February
June
May
April
August
July
November
October

a. **January** **b.** ________ **c.** ________

d. ________ **e.** ________ **f.** ________

g. ________ **h.** ________ **i.** ________

j. ________ **k.** ________ **l.** ________

5. In Canada, the seasons of the year are called **winter**, **spring**, **summer**, and **fall** (or **autumn**).

a. Name one winter month. ________________

b. Name one summer month. ________________

6. January is the first month of the year. Use this information to complete the following statements.

a. September is the ________ month of the year. Use this information to complete the following statements.

b. May is the ________ month of the year.

c. October is the ________ month of the year.

Check your answers in the Appendix.

One year is also equal to 365 days. These days are organized into weeks. Each week has seven days.

365 days in a year ÷ 7 days in a week = **52 weeks** in a year with one day left over

One year is equal to about 52 weeks.

7. Name the days of the week, in order, starting with Sunday.

- **Sunday**
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________
- ____________________

Check your answers in the Appendix.

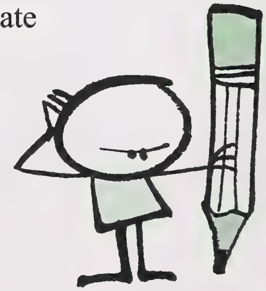
Writing Dates

Dates can be written in several different ways.

Example

Joe was born on October 22 in the year 1991. This date can be shown several different ways:

- October 22, 1991
- 22 October 1991
- 91-10-22 (year-month-day)
- 91/10/22 (year/month/day)



8. Perry was born on March 14 in the year 1994. Write his birthdate in **three** different ways.

- ____
- ____
- ____

9. Tera was born 92/5/30. Write her birthdate in words, starting with the month.

____

____

Check your answers in the Appendix.

Turn to Assignment Booklet 7C, and complete the activities for Day 25.

Day 26

Telling Time

Do you know what time it is? You probably have a good idea of the time, even without looking at a clock.

- You get hungry at mealtimes.
- You get tired near bedtime.
- You know it is getting late when the sun begins setting in the summer.

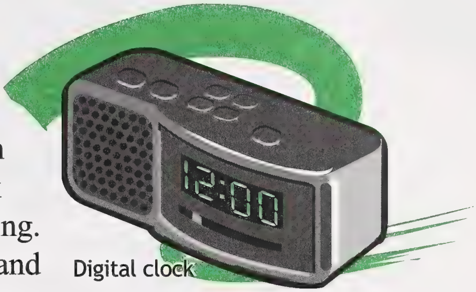
Sometimes, however, it is necessary to know the exact time. You need to be able to tell time by reading a clock.

In today’s lesson you will review what you know about time and practise telling time using watches and clocks.

Thinking About Clocks

Clocks and watches help you keep track of time. There are two basic kinds of clocks:

- digital clock
- analogue clock



Digital clock

A **digital clock** shows the time only in numbers. You may have a digital clock radio to help you wake up in the morning. Your computer, stereo system, stove, and microwave may also have digital clocks.

1. Look around your home, in your garage, or in your car. Where did you find a **digital** clock?

____

Check your answer in the Appendix.

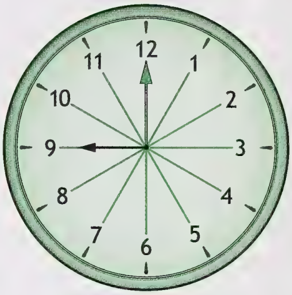
An **analogue clock** is the kind you might see on a wall or at the front of a classroom. Analogue clocks have moving hands that point out the time.

2. Look around your home again. Where did you find an **analogue** clock?

____

Check your answer in the Appendix.

Using Analogue Clocks



An analogue clock is divided into 12 equal sections. Each section is numbered 1 through 12.

The hands on an analogue clock move around the face of the clock and show that hours and minutes are passing.

You need to look at an analogue clock that is working for this activity.

3. Look at the clock for a short time. Which hand on the clock moves faster, the long hand or the short hand? ______________________

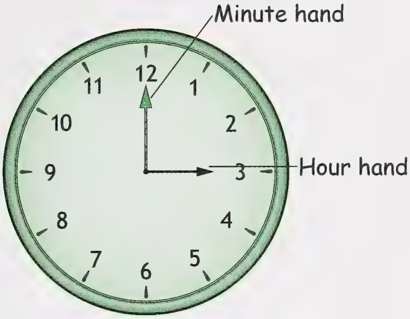
4. Which hand on the clock shows that hours are passing? __________

5. Which hand shows that minutes are passing? ________________

Check your answers in the Appendix.

Turn to Day 26 in the Cut-Out Learning Aids Section of the Appendix. Cut out the analogue clock and the hands. Use a paper fastener or paper clip to attach the hands to the clock. Be sure the hands turn freely.

Look at the time shown on this clock.


Minute hand
12
1
2
3
4
5
6
7
8
9
10
11
Hour hand

The clock shows **three o'clock** or **3:00**. The longer **minute hand** points to the number 12. The shorter **hour hand** points to the three.

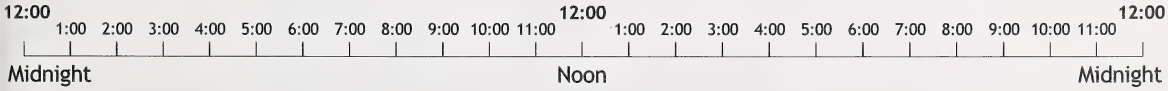
Use your cut-out clock to show the following times. Remember, the minute hand will point to the number 12 for **o'clock** times. Ask your home instructor to check your clock after you show each time.

- 5 o'clock
- 11:00
- 7:00

Night or Day?

How do you know if 8:00 means 8:00 in the morning or 8:00 at night?

Think about this time line to help you solve the problem.

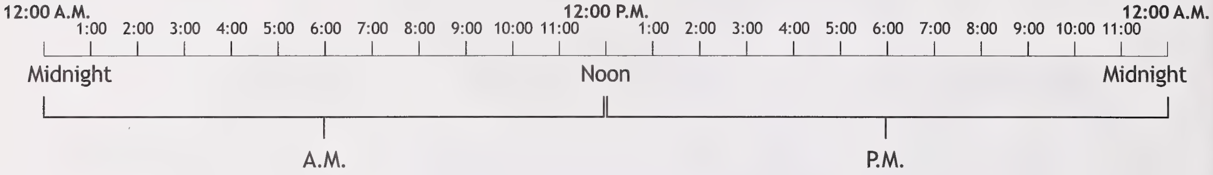

12:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
Midnight
Noon
Midnight

A day has 24 hours, but a clock only shows 12 hours. For each day, the hands on the clock go all the way around twice.

To help people tell the difference between the hours before noon and the hours after noon, the letters A.M. and P.M. are written after the time.

A.M. means the hours between midnight and noon.

P.M. means the hours between noon and midnight.


12:00 A.M.
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00 P.M.
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00 A.M.
Midnight
Noon
Midnight
A.M.
P.M.

If your friend told you to come visit at 8:00 P.M., you would know that you shold go at 8:00 in the evening.

Each new day begins at **12:00 midnight** or **12:00 A.M.**. **Noon** is called **12:00 P.M.**

6. Write A.M. or P.M. to show when the following events happen.

a. sunrise ____________

b. sunset ____________

c. eating breakfast ____________

d. eating supper ____________

e. going to bed ____________

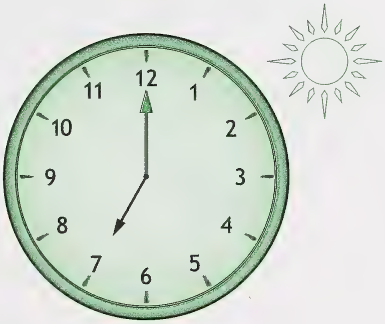
Check your answers in the Appendix.

To help you remember what A.M. and P.M. stand for, you may want to draw a small picture beside the time.

- The A.M. hours are called the morning hours, so you can draw a sun.

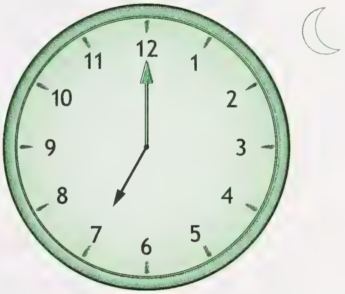
- The P.M. hours include the afternoon and evening hours, so you can draw a moon.

7:00 A.M.


12
1
2
3
4
5
6
7
8
9
10
11

7:00 in the morning

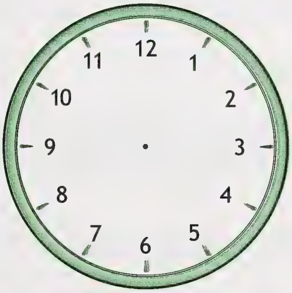
7:00 P.M.


12
1
2
3
4
5
6
7
8
9
10
11

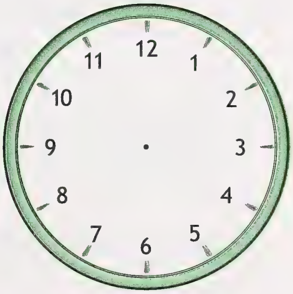
7:00 in the evening

7. Draw hands on the clocks to show the time. Draw a small picture to show whether the time is before noon (A.M.) or afternoon (P.M.).

a. It's 8:00. Time for breakfast!


12
1
2
3
4
5
6
7
8
9
10
11

b. It's 9:00. Time for bed!

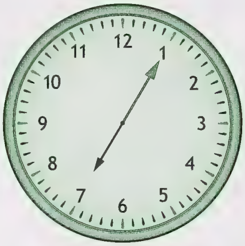

12
1
2
3
4
5
6
7
8
9
10
11

Check your answers in the Appendix.

Counting the Minutes

One hour has 60 minutes. It takes one hour for the longer minute hand to travel all the way around the clock face. At the same time, the short hour hand is slowly moving to the next number on the clock.

Notice the small divisions along the outer edge of the clock. Each of these divisions shows a **minute**.



8. Count the small divisions on your clock to answer these questions.

a. How many minutes are there between the numbers 12 and 1?

____

b. How many minutes are there between the numbers 1 and 2?

____

c. How many minutes are there between the numbers 2 and 3?

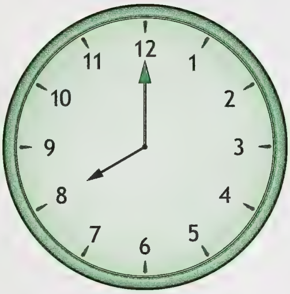
____

Check your answers in the Appendix.

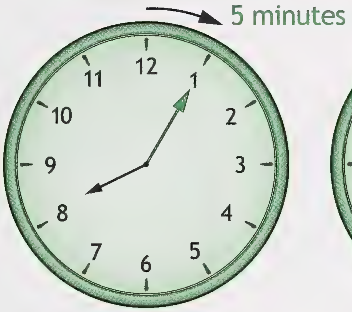
Between each number on the clock face there are five minutes.

Rather than count each minute to tell the time, you can skip count by 5.

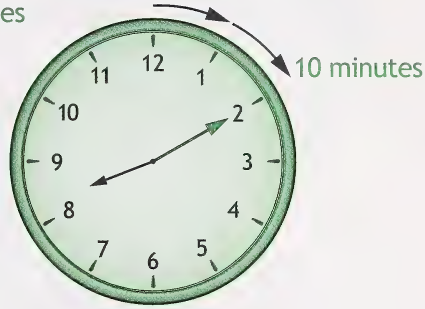
Look at the clocks below. They show how the positions of the hands change as the minutes go by.


12
1
2
3
4
5
6
7
8
9
10
11

8:00

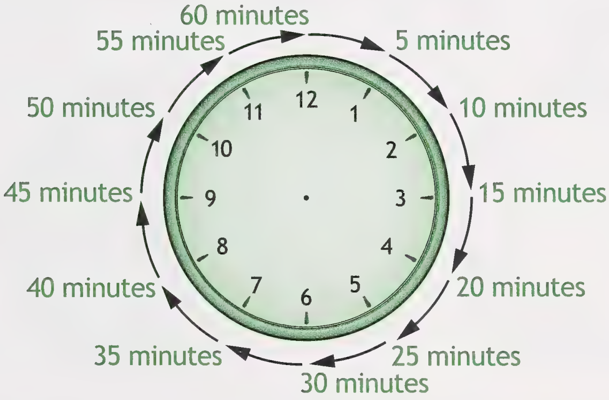

5 minutes
12
1
2
3
4
5
6
7
8
9
10
11

8:05


10 minutes
12
1
2
3
4
5
6
7
8
9
10
11

8:10

Start at the number 12 on the clock. **Count by fives.**


60 minutes
55 minutes
5 minutes
50 minutes
10 minutes
45 minutes
15 minutes
40 minutes
20 minutes
35 minutes
25 minutes
30 minutes
12
1
2
3
4
5
6
7
8
9
10
11

9. a. What number on the clock did you stop at when you said, "30 minutes?"___________

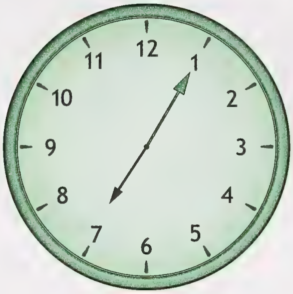
b. What number did you stop at when you said, "60 minutes?"

____

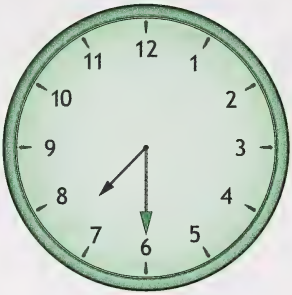
Check your answers in the Appendix.

After 60 minutes, a new hour begins and you start over again to count the minutes past the next hour.

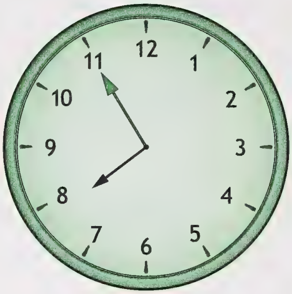
Look at the first clock. The time is **7:05**. You could also say it is **five minutes past seven o'clock**. As the minutes pass, the hour hand moves slowly toward the 8.


12
1
2
3
4
5
6
7
8
9
10
11

7:05

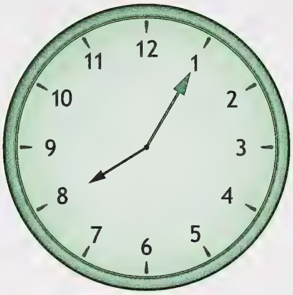

12
1
2
3
4
5
6
7
8
9
10
11

7:30


12
1
2
3
4
5
6
7
8
9
10
11

7:55

After the minute hand reaches 12 and the hour hand passes 8, a new hour begins.


12
1
2
3
4
5
6
7
8
9
10
11

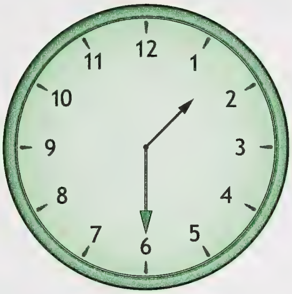
8:05

Move the hands on your cut-out clock to show each of the following times. Ask your home instructor to check your clock as you show each time.

- 5:30
- 2:15
- 7:45
- 4:55
- 9:10
- 8:20

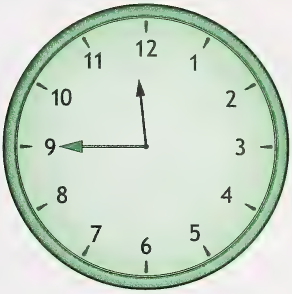
10. What time is it? Show your answer in numbers.

a.


12
1
2
3
4
5
6
7
8
9
10
11

_____ : _____

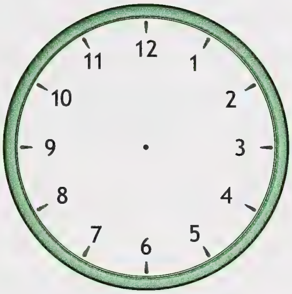
b.


12
1
2
3
4
5
6
7
8
9
10
11

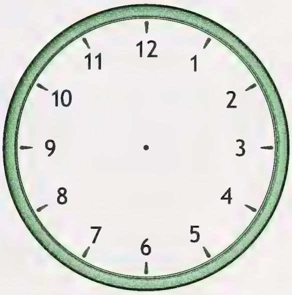
_____ : _____

11. Draw the hands of the clocks to show the following times.

a. 10:35


12
1
2
3
4
5
6
7
8
9
10
11

b. 2:25


12
1
2
3
4
5
6
7
8
9
10
11

Check your answers in the Appendix.

Problem Solving

Story Problems About Time

Alia is going to the store with her friend Shelley. She left for Shelley's house at 2:00 P.M. She walked for 5 minutes to get to Shelley's house, and then it took 15 minutes to walk to the store. Alia and Shelley spent 10 minutes shopping in the store.

What time did the girls leave the store?

Step 1: Understand the problem.

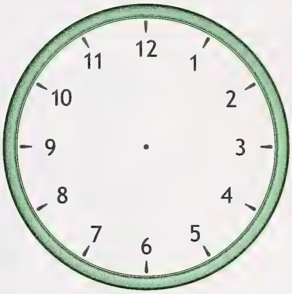
You know that Alia left home at 2:00 P.M. She walked to her friend's house and then they walked to the store. They also spent time in the store. What time did they leave the store?

Step 2: Make a plan. (Choose a strategy.)

Draw a picture of the problem. Use your cut-out clock to show the minutes on the clock to find the solution.

Step 3: Try the plan.

- Draw hands on the clock to show 2:00.



- Count 5 minutes from 2:00 to show how long it took Alia to walk to Shelley's house. Mark a **star** on the clock to show this time.
- Count 15 more minutes to show how long it took to get from Shelley's house to the store. Put an **X** on the clock to show this time.
- Count 10 more minutes to show how long the girls spent shopping in the store. This is the time when the girls left the store.

12. The girls left the store at ___________ P.M.

Step 4: Look back.

13. Does your answer make sense? ___________

Check your answers in the Appendix.

For more practice with time problems, visit this website:

http://www.mathstories.com

Choose Grade 4 Math Problems and select Problems About Time.

Turn to Assignment Booklet 7C, and complete the activities for Day 26.

Putting It All Together (III)

RICE
RISPIES
Salt

In Section 3 you learned about measuring capacity, mass, money, and time:

- using different measuring tools
- measuring capacity
- measuring how much objects weigh
- estimating the capacity and mass of different objects
- counting money and making change
- using units of measurement like litres, millilitres, grams, and kilograms
- telling time and using words about time
- using the best units to measure certain objects
- comparing and changing units of measurement
- solving measurement and time problems

Today you will show what you have learned about measuring capacity, mass, money, and time by completing several review questions. You will then work on a Challenge Activity related to measurement.

Part 1: Reviewing the Concepts

For Part 1 you will complete **all** of the review questions for Day 27 in Assignment Booklet 7C. First you may wish to look back through the Student Module Booklet to review the concepts that were covered in Section 3.

Part 2: Challenge Activities

The Challenge Activities in Part 2 are designed to extend and explore ideas about measurement. In Assignment Booklet 7C you will find two Challenge Activities. Choose **either** Activity A **or** Activity B (**or** you may do both if you wish).

Turn to Day 27 in Assignment Booklet 7C, and complete all of the review questions in Part 1. Then do one or both of the Challenge Activities in Part 2.

Day 28

Assessing What You Know (III)

Today is the last day you will be working in Module 7: Measurement. You will complete **three** activities in Assignment Booklet 7C:

- Showing What You Can Do
- Basic Number Facts
- Thinking About What You Know

Read the explanation of the activities in Parts 1, 2, and 3 before turning to Assignment Booklet 7C. Note that you will need the help of your home instructor for the activities in Parts 1 and 2.

Part 1: Showing What You Can Do

For this activity you will need the help of your home instructor. You will be working on a short activity while your home instructor observes you. As you work through the problem, try to explain clearly what you are doing.

Your home instructor may ask you questions like the following:

- "How do you know that?"
- "Why did you decide to do that?"
- "How did you get that answer?"

Note to the Home Instructor

This performance assessment should take about 15 minutes. The Home Instructor's Assessment Page and accompanying Student's Assessment Page can be found in Day 28 of Assignment Booklet 7C. Remove both pages from the Assignment Booklet. Read over the student's page so you are familiar with the student's assigned task. You should also preview the interview questions and the checklist before the student begins working on the assigned task.

As the student works to answer the questions, encourage him or her to talk about what he or she is doing. **Allow the student to use any manipulatives or cut-out learning aids available to help solve the problem**. You may or may not wish to use some of the interview questions. Look for understanding and the student's ability to explain clearly what he or she is doing to arrive at an answer. Indicate on the checklist whether you feel the student demonstrated the skills being assessed.

Attach both assessment pages to the Assignment Booklet before sending it in for marking.

Part 2: Basic Number Facts

In this activity you will show how well you are doing at learning your basic number facts for multiplication and division. Ask your home instructor to time you as you do each test.

Part 3: Thinking About What You Know

In this activity you will spend some time looking back over the Student Module Booklet. Then you will complete some statements that tell about things you liked about the module, things you didn't understand, and things you would like to learn more about. This information will be helpful to your teacher in determining how well you understood the information presented in the module.

When your home instructor is ready, turn to Assignment Booklet 7C, and complete the activities found in Parts 1, 2, and 3 of Day 28.

This is the end of Module 7: Measurement. Check over Assignment Booklet 7C to make sure you have completed all of the assigned activities for each day. Remember that for Day 27 you need to complete the review questions in Part 1 and one or both Challenge Activities in Part 2.

Be sure to attach the **two** assessment pages from Day 28 to Assignment Booklet 7C. Then send Assignment Booklet 7C to your teacher.

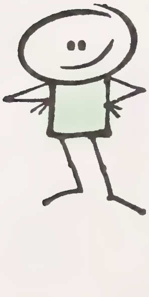
Appendix

Glossary

Answer Key to Self-Marking Activities

Cut-Out Learning Aids

Number Facts Progress Chart



Glossary

area: the amount of space covered by a shape

capacity: the amount a container can hold

For example, the capacity of a pop can is 355 mL.

centimetre (cm): a unit used to measure length, distance, or height

1 cm = 10 mm

century: a time period of 100 years

circumference: the distance around the outside edge of a circular shape or object

data: information collected to solve a problem

decade: a time period of ten years

decimetre (dm): a unit used to measure length, distance, or height

1 dm = 10 cm

distance: the amount of space between objects or places

estimate: to make a careful guess that is close to the actual measurement without using a measuring tool

figure: a two-dimensional shape; a flat shape

gram (g): a unit used to measure mass

height: the distance from the bottom to the top of an object

kilogram (kg) (kilo): a unit used to measure mass

1 kg = 1000 g

kilometre (km): a unit used to measure distance

1000 m = 1 km

length: how long something is; the distance from one end to the other on the longer side of an object

litre (L): a unit used to measure capacity

1000 mL = 1 L

mass: the amount of matter in an object, measured by its weight

metre: the basic unit for measuring length and distance

$1 \text{ m} = 100 \text{ cm}$

millennium: a time period of 1000 years

millilitre (mL): a unit used to measure capacity

$1000 \text{ mL} = 1 \text{ L}$

millimetre (mm): a unit used to measure length, distance, or height

$10 \text{ mm} = 1 \text{ cm}$

perimeter: the distance around the outside of a shape or a figure

polygon: a many-sided figure or shape

For example, triangles, squares, and hexagons are polygons.

rectangle: a flat shape with four sides

The parallel sides of a rectangle are equal and the corners are square.

scale: a measuring tool used to find the mass of an object

square centimetre (cm^2): a unit of measurement (1 cm by 1 cm) used to calculate area

square metre (m^2): a unit of measurement (1 m by 1 m) used to calculate area

triangle: a flat shape with three sides

volume: the amount of space inside a container; another word for *capacity*

width: the distance from side to side, usually on the shorter side of an object

weigh: to measure the mass of an object

Answer Key to Self-Marking Activities

Day 1: Exploring Length, Width, Height, and Distance

1. **a.** length **b.** width
c. height **d.** distance

2. **a.** height **b.** width
c. length **d.** distance

3. **a.** 30-cm ruler or measuring tape
b. measuring tape or metre-stick
c. car odometer

4. Metres are used to measure height.

5. Kilometres or metres are used to measure distance.

6. Division Number Facts

8	5	9	9	7
8	5	3	6	8
6	3	4	4	2
7	3	8	5	4
7	5	6	9	7

7. Multiplication Number Facts

12	36	45	12	18
27	24	64	45	40
20	36	63	35	30
18	25	49	45	56
42	48	81	32	54

Day 2: Using Centimetres, Millimetres, and Decimetres

1. Objects that measure close to 1 cm include the following:

   - the width of a nail file
   - the width of the toggle on a light switch
   - the width of a button
   - the width of a large paper clip
   - the width of a pen
   - the thickness of a TV cable

   Check with your home instructor if you are not sure of your answers.

2. Your answer will show four objects measured in centimetres. Your answers will be rounded to the closest centimetre. Check with your home instructor if you are unsure of your measurements. Some possible answers are provided.

Object	Measurement in Centimetres on One Side
Earring	8 cm
Knife	28 cm
Glass	15 cm
Toy truck	6 cm

3. Items that measure close to 1 mm include the following:

   - the thickness of a ring
   - the width of the point of a pen
   - the width of the tine of a fork
   - the thickness of a small nail

   Check with your home instructor if you are not sure of your answers.

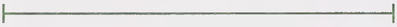
4. a. 9 mm **b.** 10 mm **c.** 17 mm

5. a. 1 cm = **10** mm **b.** 3 cm = **30** mm
c. 4 cm = **40** mm **d.** 9 cm = **90** mm

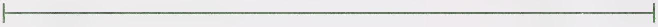
6. a. 60 mm = **6** cm **b.** 40 mm = **4** cm
c. 50 mm = **5** cm **d.** 110 mm = **11** cm

7. Compare your lines with the ones drawn here. Have your home instructor help you check your answers to this question.

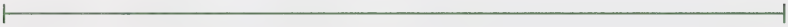
a. 6 cm



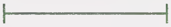
b. 10 cm



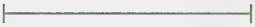
c. 12 cm



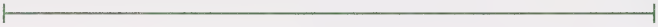
d. 25 mm



e. 38 mm



f. 100 mm



8. The measurement should be close to 10 cm.

9. You may have found a coin that is about 1 mm thick, a letter in a book that is about 1 mm wide, or a piece of yarn that is about 1 mm thick. Other answers are possible. Have your home instructor check your answers if you are not sure of them.

10. a. and **b.** Your answers will vary, depending upon the objects you found. If your objects were much larger than 1 mm, continue looking for smaller objects so that you can learn to estimate 1 mm without measuring.

11. a. Your answers will vary depending on the objects you found. Objects that are about 1 cm might include the width of a spoon handle, a word in a book, a button, a safety pin, the width of a pen, the thickness of an eraser, the width of a knife blade, and the thickness of a book. Ask your home instructor to help you check the measurements of the three objects in each box.

b. Your answer should be YES if all of your estimates were correct. If you answered NO, you should keep practising until you learn to estimate 1 cm without measuring.

12. a. Your hands should fit across the page two times.
b. The page is about 2 dm wide.

13. Your answers will vary depending on the objects you found. Ask your home instructor to help you check the measurements of each of the objects.

14. If your objects are much larger or smaller than 1 dm, keep searching for objects until you can estimate 1 dm without measuring.

15. You should have placed an ✗ by **a.** and **b.**

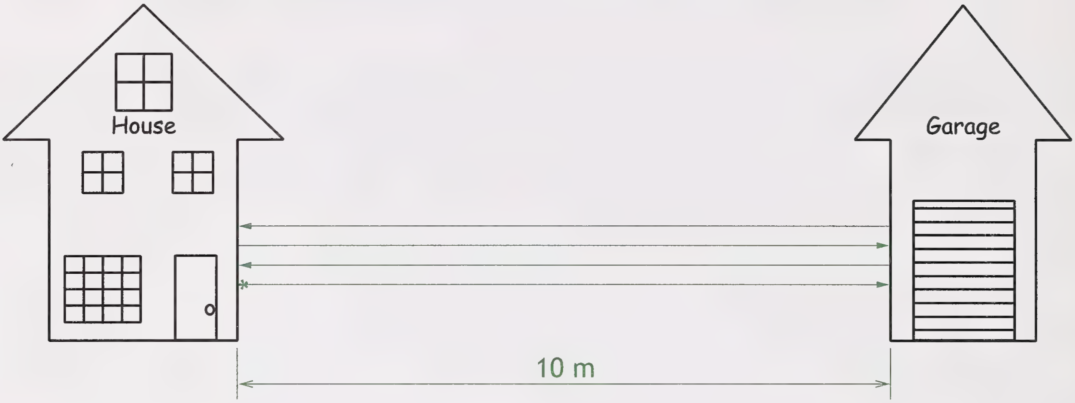
16. You should have placed an ✗ by **a.** and **c.**

17. You should have placed an ✗ by **a.**, **c.**, and **d.**

Day 3: Problem Solving

1. You need to find the total distance walked back and forth by the two boys.

2. a. Your picture should look similar to the one that follows.

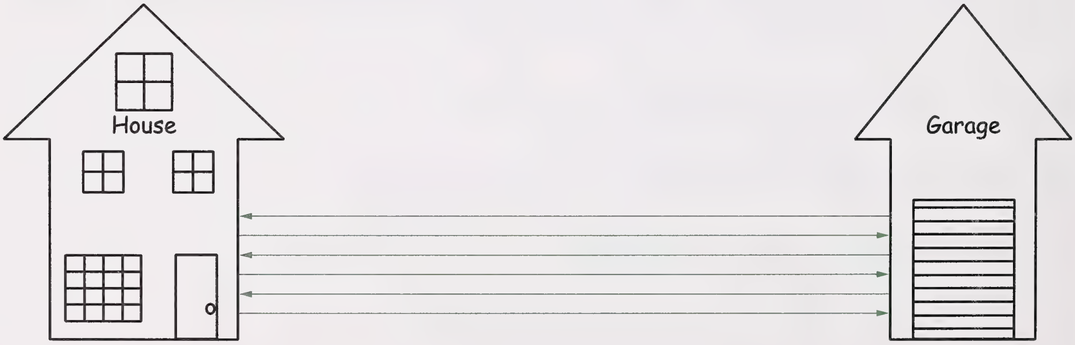


b. Marco made two trips.

c. One trip is equal to 20 m $(10\ \text{m} + 10\ \text{m})$.

d. Marco walked 40 m $(20\ \text{m} + 20\ \text{m})$.

3. a. Your lines for Merlin should look like the following.



b. Merlin made three trips.
c. One trip is equal to 20 m.

d. Merlin walked 60 m $(20\ \text{m} + 20\ \text{m} + 20\ \text{m})$.

4. a. $40\ \text{m} + 60\ \text{m} = 100\ \text{m}$

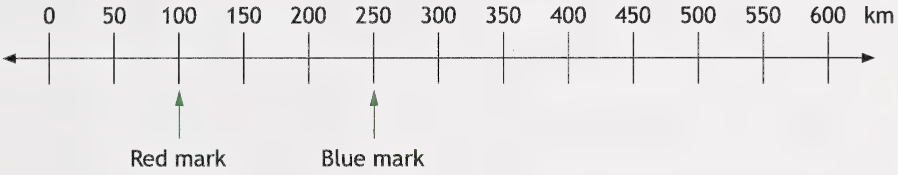
b.

ANSWER TO THE PROBLEM

Merlin and Marco walked 100 m altogether.

5. You need to find the total distance from Kyla's home to the ski resort.

6. a. and **b.**



7. a. Your number line should have a red mark at 100 km.

b. You should have a blue mark at 250 km.

c. $250\ \text{km} \times 2 = 500\ \text{km}$

d.

ANSWER TO THE PROBLEM

The total distance from Kyla's home to the ski resort is 500 km.

Day 4: Comparing and Changing Units

1. a. 10 cubes
b. 10 mm

2. a. Three rods stand for **three** centimetres.
b. In three rods there are **30** cubes.
c. In 3 cm there are **30** mm.

3. a. 55 mm 5.5 cm **b.** 125 mm 12.5 cm
c. 45 mm 4.5 cm **d.** 20 mm 2.0 cm
e. 120 mm 12.0 cm

4. **a.** There are 10 cm in 1 dm.
b. The pencil is 10 cm long.
c. The mug is 2 dm tall.

5. **a.** 10 mm in 1 cm
$10 \times 10 \text{ mm} = 100 \text{ mm in } 10 \text{ cm}$

b. There are 100 mm in 10 cm.

c. Yes, there are 100 mm in 1 dm. You know this because 1 dm is equal to 10 cm. There are 100 mm in 10 cm **or** 1 dm.

6. **a.** 100 mm **b.** 10 cm

7. The button is 2 cm across.

8. **a.** 5 cm **b.** 12 cm **c.** 165 mm
d. 20 cm **e.** 183 mm **f.** 10 cm

Day 5: Writing Measurements Using Decimals

1. The frame is wide enough to hold the photo. You know this because the frame size and the width of your photo are exactly the same.

$2.13 \text{ cm} \times 10 = 213 \text{ mm}$

2. **a.** $1 \text{ cm} = \mathbf{10} \text{ mm}$ **b.** $8 \text{ cm} = \mathbf{80} \text{ mm}$
c. $21 \text{ cm} = \mathbf{210} \text{ mm}$ **d.** $40 \text{ cm} = \mathbf{400} \text{ mm}$
e. $15 \text{ cm} = \mathbf{150} \text{ mm}$ **f.** $30.4 \text{ cm} = \mathbf{304} \text{ mm}$
g. $19.1 \text{ cm} = \mathbf{191} \text{ mm}$ **h.** $10 \text{ cm} = \mathbf{100} \text{ mm}$
i. $46 \text{ cm} = \mathbf{460} \text{ mm}$ **j.** $35.5 \text{ cm} = \mathbf{355} \text{ mm}$

3. **a.** $10 \text{ mm} = \mathbf{1} \text{ cm}$ **b.** $30 \text{ mm} = \mathbf{3} \text{ cm}$
c. $35 \text{ mm} = \mathbf{3.5} \text{ cm}$ **d.** $42 \text{ mm} = \mathbf{4.2} \text{ cm}$
e. $129 \text{ mm} = \mathbf{12.9} \text{ cm}$ **f.** $405 \text{ mm} = \mathbf{40.5} \text{ cm}$
g. $19 \text{ mm} = \mathbf{1.9} \text{ cm}$ **h.** $110 \text{ mm} = \mathbf{11} \text{ cm}$
i. $86 \text{ mm} = \mathbf{8.6} \text{ cm}$ **j.** $355 \text{ mm} = \mathbf{35.5} \text{ cm}$

4. **a.** 1.2 dm **b.** 1.5 dm

5. **a.** 40 cm = **4** dm **b.** 129 cm = **12.9** dm
c. 18 cm = **1.8** dm **d.** 450 cm = **45** dm
e. 55 cm = **5.5** dm

6. **a.** 5.7 dm = **57** cm **b.** 63 dm = **630** cm
c. 18 dm = **180** cm **d.** 31.4 dm = **314** cm
e. 12.1 dm = **121** cm

7. **a.** Yes **b.** Yes
c. No **d.** No
e. Yes

8. You should have chosen the sentence pairs in question 7.c. or 7.d. In question 7.c., only the second sentence makes sense. A screwdriver that is 150 dm long would be as long as three pickup trucks!

In question 7.d., only the first sentence makes sense. A table that is 9 mm wide wouldn't even be as wide as your finger!

9. **a.** 12 dm **b.** 232 mm
c. 6.4 dm **d.** 10.1 cm
e. 37 cm **f.** 1.2 cm
g. 8 dm

Day 6: Exploring Metres

1. 100 cm

2. Many answers are possible. You should have listed five things that are about 1 m long. Some examples of things in a home that might be 1 m long follow:

- the distance from the kitchen sink to the stove
- the width of a shelf or bookcase
- the length of a stereo stand or a TV stand
- the width of a single bed
- the width of a doorway

3. **a.** Your answers will vary depending on the objects you found. Objects that measure about 1 m long or 1 m wide might include the following:

    - the handle of a mop or broom
    - the width of a large picture or mirror
    - the length or width of a window
    - the length of a golf club
    - the length or width of a rug

    Ask your home instructor to help you check the measurements of the three objects you have listed in each box.

    b. Your answer should be YES if all of your estimates were correct. If you answered NO, you should keep practising until you learn to estimate 1 m without measuring.

4. **a.** Many answers are possible. You might have chosen a car, a trailer, a pickup truck, a shed, a section of fence, or a garage. You should have given an estimate of the length and the actual measurement.

    b. You should explain the method you used to arrive at your estimate. Did you use your arm span to help you estimate, or did you use some other method? Explain your method to your home instructor.

    c. Measuring larger objects requires special measuring tools. You may have used a metre-stick or a 1-m tape. Perhaps you have a carpenter's measuring tape that measures as much as 12 m, 15 m, or even 30 m.

    d. Answers will vary depending on the measuring tool you used. If you used a 30-cm ruler to measure a fence that is 5 m long, you probably found the measuring hard to do. If you used a carpenter's measuring tape, you probably found it easier. Perhaps you asked someone to help you by holding one end of the measuring tool while you held the other. Having a helper often makes large measuring tasks easier.

5. Answers will vary depending on the objects you found. Objects that are 1 m tall might include the following:

- height of a bookcase
- distance from the top of a chair to the floor
- height of a kitchen counter
- height of a chest of drawers
- height of a headboard on a bed

Ask your home instructor to help you check the measurements of all five objects.

6. **a.** A hockey net is about **1** m high.
b. The front door of your house is about **2 m** tall.
c. The stove in most kitchens is about **1 m** high.
d. Your bedroom door is about **1 m** wide.
e. The length of a snowmobile is about **2 m**.

7. $\mathbf{10}\ \text{dm} = 1\ \text{m}$

8. 10 dm

9. 3 m

10. **a.** $1\ \text{dm} = 10\ \text{cm}$

To find the number of centimetres in 10 dm, you multiply by 10.

$$10\ \text{cm} \times 10 = 100\ \text{cm}$$

b. There are 100 cm in 10 dm.

c. There are 100 cm in 1 m. You know this because 10 dm is the same as 1 m.

$$10\ \text{dm} = 1\ \text{m}$$

$$10\ \text{dm} = 100\ \text{cm}$$

Therefore, $1\ \text{m} = 100\ \text{cm}$.

11. 100 cm

12. 9 m

13.

Metres	1	2	3	4	7	9	10	12	15
Centimetres	100	200	300	400	700	900	1000	1200	1500

Day 7: Metres and Kilometres

1. Your answers may be different from the ones given here. Your answers should have a decimal, even if they are exact numbers. For example, **2 m** should be written as **2.0 m** as a decimal.

a. the length of your desk: 1.2 m
b. the height of your refrigerator: 1.7 m
c. the distance from your TV to your sofa: 2.4 m

2. Your answers in decimetres and centimetres should have the same numerals as your answers to question 1. The decimal place may change or there may be another zero in your answers. Compare your answers to the ones given here.

a. for a desk that is 1.2 m long:	**12 dm**	**120 cm**
b. for a refrigerator that is 1.7 m high:	**17 dm**	**170 cm**
c. for a distance of 2.4 m:	**24 dm**	**240 cm**

3. 1.8 m

4. The following pairs should be circled:

a. 5.7 cm and 57 mm
c. 25 dm and 2.5 m
d. 360 mm and 36 cm
f. 9.2 m and 92 dm

g. 16.9 dm and 169 cm
i. 4 m and 400 cm
j. 34 cm and 3.4 dm

5. a. 185 cm = **1.85** m
b. 210 cm = **2.10** m
c. 142 cm = **1.42** m
d. 176 cm = **1.76** m
e. 338 cm = **3.38** m

6. a. Answers will vary depending on your height. Your height will likely be somewhere between 120 cm and 140 cm.

b. Your height in metres is found by moving the decimal two places to the left. For example, if your height in centimetres is 135 cm, it would chnge to 1.35 m.

7. If you walk 1 km in 15 minutes, then it will take you four times as long to walk 4 km.

$4 \times 15 = 60$ min or 1 hour

8.

Kilometres	1	2	5	9	10
Metres	1000	2000	5000	9000	10 000

9. a. to **d.** Answers will vary depending on distances from your home to the places listed. Ask your home instructor to help you mark these four questions.

10. Your answer should be similar to the one that follows.

It would take a long time to measure the length and width of your bedroom floor in millimetres. There would be a very large number of millimetres to count and this would not be easy to keep track of.

11. Your answer should be similar to the one that follows.

A table would be just a very small part of 1 km. A kilometre is too big to use when measuring an object like a table.

12. **a.** You would use millimetres.
    b. You would use centimetres.
    c. The information is in kilometres.

13. **a.** metres
    b. centimetres
    c. metres (or kilometres if you walked a long distance)
    d. millimetres
    e. centimetres, decimetres, or metres

Day 8: Graphing and Measuring

1. Many answers are possible. Some examples are provided for you.

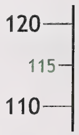
- a stopwatch
- a metre-stick
- a thermometer
- a measuring tape
- weigh scales
- measuring spoons
- measuring cups

2. The names of the people measured should appear in the left column of the chart. The arm-span measurements should appear in the right column of the chart.

3. **a.** An interval should be chosen that is easy to work with and that allows you to use most of the space on the graph form. Arm spans are not usually larger than 200 cm. Since there are 20 intervals, you could let each interval stand for **10 cm.**

   b. An interval of 100 is not a good choice because very little of the graph form would be used. The bars would be very short. It would be difficult to tell what measurements the bars stand for or if one bar is showing a different measurement than another bar.

4. A measurement of 115 cm would be shown by a bar equal to the height of a tick midway between 110 cm and 120 cm.



5. Check to see that your graph has each of the following:

- a title at the top
- the vertical axis is labelled
- the horizontal axis is labelled
- a scale that begins at zero along the vertical axis
- the bars are coloured
- each bar is labelled with a person's name

6. Answers will vary. You may have made some of the following conclusions:

- People who are taller have bigger/smaller arm spans.
- People who are older always have/don't always have bigger arm spans.
- Girls have bigger/smaller arm spans than boys the same age.

7. Addition Number Facts

12	16	12	12	14
13	11	12	13	14
11	15	14	11	14
11	13	12	11	14
13	18	15	12	14

8. Subtraction Number Facts

9	9	8	8	6
6	7	9	5	7
4	7	8	8	3
7	9	5	8	7
6	9	6	2	5

Day 9: Putting It All Together (I)

Complete the Day 9 activities in Assignment Booklet 7A. This work will be marked by your teacher.

Day 10: Assessing What You Know (I)

Complete the Day 10 activities in Assignment Booklet 7A. This work will be marked by your teacher.

Day 11: What Is Perimeter?

1. a. The best unit is centimetres. Millimetres could also be used.
   b. The distance in centimetres across the top is 21.5 cm.
   c. The distance in centimetres across the bottom is 21.5 cm.
   d. The distance in centimetres down the left side is 28 cm.
   e. The distance in centimetres down the right side is 28 cm.
   f. The total distance around the book cover is 99 cm.
   g. The perimeter of the book is **99** cm.

2. Your answer should be similar to the one that follows.

   I can find the perimeter of a rectangle by multiplying the length by 2, multiplying the width by 2, and then adding the two amounts together.

   2 times the length + 2 times the width = Perimeter

3. a. You should have circled the square and the rectangle.

   b. The shortcut rule works only for figures that have a pair of equal sides for the length and another pair of equal sides for the width.

4. a. $\text{Perimeter} = 8\ \text{cm}$

   $(2\ \text{cm} \times 2) + (2\ \text{cm} \times 2) = 4\ \text{cm} + 4\ \text{cm} = 8\ \text{cm}$

   or $2\ \text{cm} \times 4\ \text{sides} = 8\ \text{cm}$

   b. $\text{Perimeter} = 16\ \text{cm}$

   $(3\ \text{cm} \times 2) + (5\ \text{cm} \times 2) = 6 + 10 = 16\ \text{cm}$

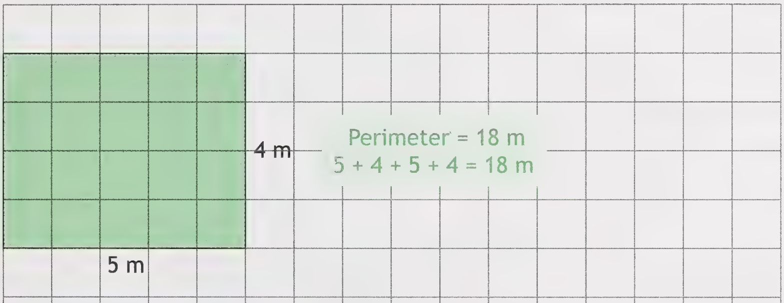
5. A square has four equal sides, so the perimeter can be found by multiplying the length of one side by 4.

6. Your answers will depend upon how large your windows are. Have your home instructor help you check your answers to this problem.

Make sure that you have added four measurements together for each window to find the perimeter. The perimeter for each window may look quite large if you are working in centimetres. This is why you have been allowed to use a calculator to find the solution.

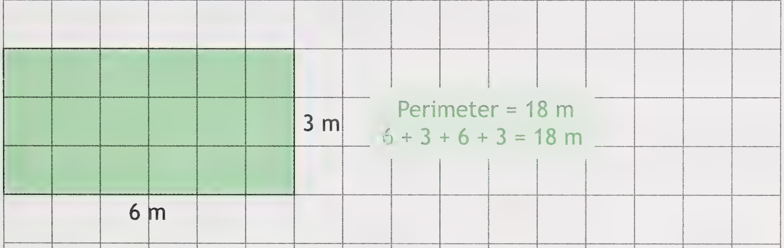
Note: Your final answer should be the total of the three perimeter measurements (Perimeter 1 + Perimeter 2 + Perimeter 3).

7.



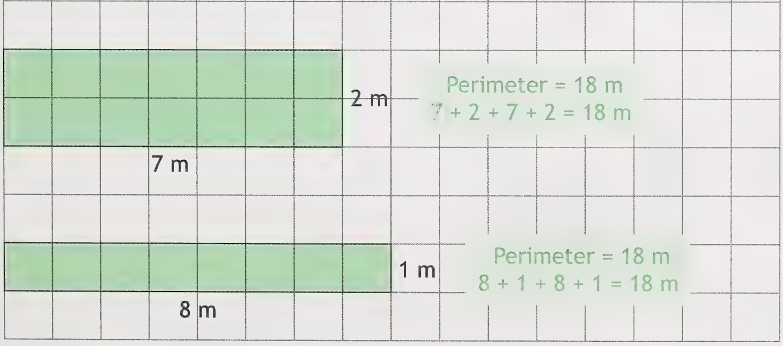
Perimeter = 18 m
5 + 4 + 5 + 4 = 18 m

8.



Perimeter = 18 m
6 + 3 + 6 + 3 = 18 m

9.



Perimeter = 18 m
7 + 2 + 7 + 2 = 18 m

Perimeter = 18 m
8 + 1 + 8 + 1 = 18 m

10. The first two floor plans are probably the best to use for a bedroom. The last two floor plans are too long and narrow.

Day 12: Estimating and Comparing Perimeters

1. a. You should have chosen two items that are rectangular in shape, such as a box, a book, a desk, or a computer screen.

b. You should have estimated the perimeter of each object to the nearest centimetre or millimetre, and written the estimates in the table. You should have written the name of the object you predict will have the greater perimeter.

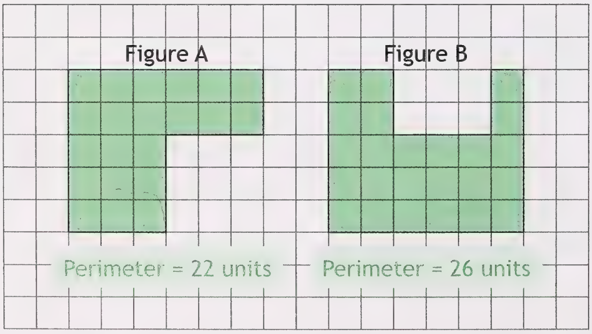
c. You should have used the same kind of unit to measure both items so that they can be compared easily. The measurements should be entered in the table under Actual Perimeter.

d. Were your estimates reasonably close? If not, practise this question again until you are able to estimate the perimeters of objects more closely. Get help from your home instructor if necessary.

e. Your explanation should state that when you estimated, you could tell which object had the larger perimeter. Clues you might have used are that one object appeared larger and had longer sides.

2. a. The best estimate is B. It has the longest perimeter.
b. The best estimate is C. It has the shortest perimeter.

3. a. Figure B should be circled.



b. Figure B should be circled.

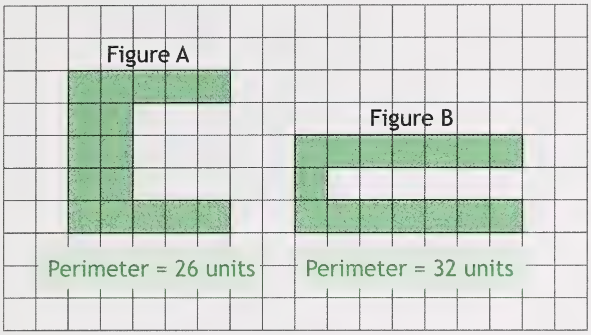


Figure A
Figure B
Perimeter = 26 units
Perimeter = 32 units

c. Figure A should be circled.

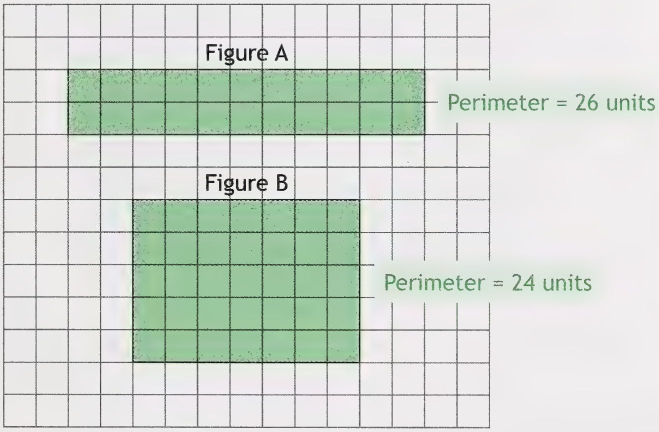


Figure A
Perimeter = 26 units
Figure B
Perimeter = 24 units

4. a. The perimeter of the 1×1 square is 4 cm.

b. The perimeter of the 2×2 square is 8 cm.

c. The perimeter of the 3×3 square is 12 cm.

5.

Length of Side (cm)	Perimeter (cm)
4	16

6. The completed T-table should look like this.

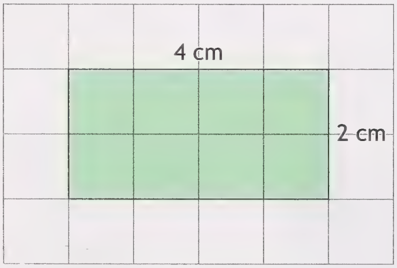
Length of Side (cm)	Perimeter (cm)
1	4
2	8
3	12
4	16
5	20
6	24
7	28
8	32
9	36
10	40

7. The rule for the T-table is multiply the length of one side by 4.

8. The lengths of the four sides of the rectangle are 8 cm, 10 cm, 8 cm, and 10 cm.

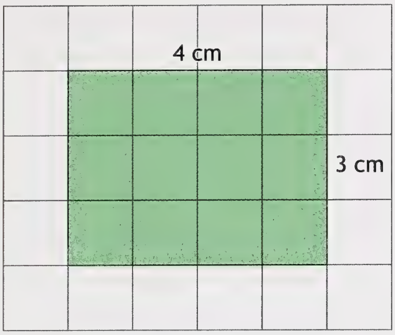
9. The lengths of the four sides of the rectangle are 24 cm, 11 cm, 24 cm, and 11 cm.

10. a. The rectangle should be 4 cm long and 2 cm wide.



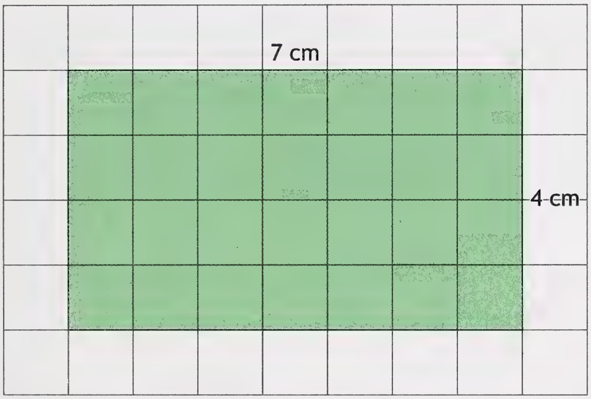
b. $4+\mathbf{2}+\mathbf{4}+\mathbf{2}=12\text{ cm}$

11. a.



b. The perimeter is **14 cm**.

12. a.



b.
$$\begin{aligned}\text{Perimeter} &= 2(\text{length}) + 2(\text{width}) \\ &= (2 \times 7) + (2 \times 4) \\ &= 14 + 8 \\ &= 22 \text{ cm}\end{aligned}$$

13. Addition Number Facts

15	12	13	11	13
11	14	13	15	13
12	14	15	12	15
12	11	14	11	12
17	11	13	10	18

14. Subtraction Number Facts

9	9	8	9	4
5	8	8	7	8
7	6	8	9	9
7	7	4	9	2
5	8	5	6	7

Day 13: Circumference

1. a. The pop can should measure close to 21 cm or 210 mm.

b. Your measurement of the garbage can will vary, depending on the size of the can. Have your home instructor help you check your measurement again.

2. You need to measure the circumference of the five curved flower beds and the perimeter of the T-shaped sidewalk.

3. a. Your answers will vary, depending on the size of each of the body parts listed. You should have measured in centimetres.

b. You likely found that for both persons measured, the wrist measurement was the smallest measurement and the waist measurement was the largest. If the other person was an adult, you likely had very different measurements. If the other person was the same size as you, you likely had similar measurements for some body parts.

4.

Object	Circumference (cm)
Soup can	21 cm
2-L pop bottle	34 cm
Coffee mug	between 23 cm and 27 cm
Plant pot	between 30 cm and 50 cm
Bucket or pail	between 60 cm and 100 cm

5. **a.** Cylinder A is bigger around than Cylinder B.
   b. The two cylinders appear to be about the same height.

6. The circumference is larger than the height.

7. Answers will vary depending on the size of the cans you used for the activity. You should have checked five boxes in the Predict columns, written your estimates in the Estimate columns, and written the exact measurements (the height and circumference) of each can in the Measure column.

   A sample table is shown.

	Predict Which is greater? (✓)		**Estimate**		**Measure**	
	Height	**Circumference**	**Height**	**Circumference**	**Height**	**Circumference**
Can 1	✓		30 cm	15 cm	24 cm	23.5 cm
Can 2	✓		13 cm	12 cm	10 cm	21 cm
Can 3	✓		12 cm	10 cm	9 cm	16.5 cm
Can 4	✓		15 cm	12 cm	12 cm	21 cm
Can 5		✓	12 cm	30 cm	9.5 cm	31.5 cm

8. **a.** If you predicted correctly for each can, you should have circled YES. If you did not predict correctly, you should have circled NO.

   b. It is likely that most of your cans had circumferences that were greater than their heights. You should have put an ✗ beside the first sentence.

   c. You may have been surprised that all (or most) of the circumferences are larger than the heights of the cans. Because of their shape, pop cans, soup cans, juice cans, and especially potato chip cans look like they are taller than the distance around them.

Day 14: Perimeter of Polygons

1. **a.** To find the perimeter of a square, multiply the length of one side by **4**.

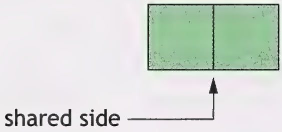
   b. To find the perimeter of a rectangle, add together two times the **width** and two times the **length**.

2. To find the circumference of a figure that does not have straight sides, use a string or flexible tape to measure the distance around the outside of the figure.

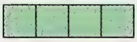
3. **a.** 8 cm **b.** 20 cm **c.** 8 cm **d.** 21 cm

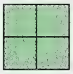
4. **a.** 9 cm **b.** 14 cm **c.** 17 cm

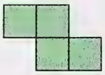
5. Some of the squares share a side on the inside of the arrangement. The shared side can't be counted as part of the perimeter because it is not part of the distance around.

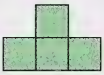


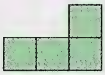
6. There are five arrangements of the four flats.


P = 10 units


P = 8 units


P = 10 units


P = 10 units


P = 10 units

Any other arrangement you made is probably one of these arrangements that has been turned in a different direction.

7. The perimeter for each of the arrangements was the same (10 units), except for one arrangement that was 8 units.

8. **a.** 24 cm
   b. 32 cm

9. a.

Number of Squares	Perimeter
1	4 units
4	8 units
9	12 units
16	16 units
25	20 units
36	24 units

b. The rule is add 4.

10.

Number of Tables	Guests
1	4
2	6
3	8
4	10
5	12
6	14
7	16
8	18
9	20

11. a. 12 guests **b.** 16 guests **c.** 9 tables

Day 15: All About Area

1. **a.** The first hand print (on the left) covers the largest area. The reason is that it covers a greater number of whole squares than the other two hand prints.

   b. The hand print on page 113 covers the smallest area.

   c. Many estimates are possible. You could count the number of whole squares in one row and then multiply by the approximate number of rows.

   - Left hand print: **80** squares
   - Middle hand print: **70** squares
   - Right hand print: **45** squares

2. **a.** Depending on the size of your hand and your friend's hand, you may decide that one or the other is larger.

   b. You know one is larger because it seems to cover more of the paper (or more whole squares can be seen inside the outline).

3. **a., b., c.,** and **d.** Answers will vary. You should have more whole squares than half squares.

4. and **5.** Your chart should contain the information you have collected about your hand and your friend's hand. The larger hand will have larger numbers in the chart.

6. No, your answer was not exact. There were many squares that were only partly covered. It is difficult to total up the areas of all the partly covered squares accurately. Instead, a close estimate is made.

7. The book would be the easiest to measure because the sides are straight lines.

8. **a.** a square metre

   b. m^2

9. **a.** The square is 1 km long and 1 km wide.

   b. km^2

10. **a.** $4\ \text{mm}^2$

b. $7\ \text{km}^2$

11. **a.** 3 square decimetres
b. 2 square metres

12. **a.** $16\ \text{cm}^2$

b. $18\ \text{cm}^2$

c. $18\ \text{cm}^2$

13. **a.** $\text{Area} = 12$ square units

b. $\text{Area} = 16$ square units

14. Answers will vary depending upon the size of rectangle. Ask your home instructor to check your area calculation for accuracy.

Day 16: Learning More About Area

1. You might find that a table or desk measures about $1\ \text{m}^2$. The top or front of a stove, the top of a fridge, a small rug, a coffee table, a large box, or a baby quilt might also measure about $1\ \text{m}^2$.

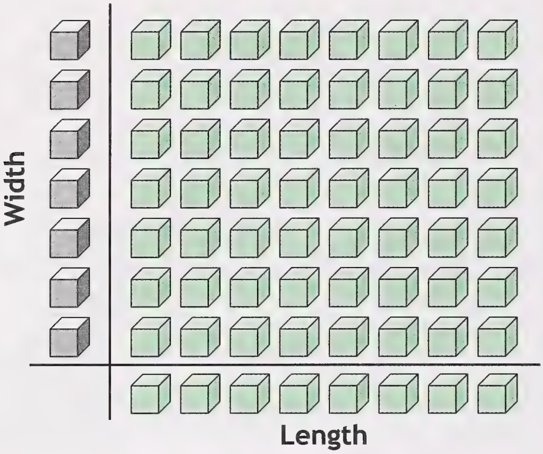
2. Objects that measure about $2\ \text{m}^2$ might include a single bed, a large table, the top of a large kitchen island, a sofa, an area rug, or the top or front of a large freezer.

3. Things that measure about $10\ \text{m}^2$ might include the floor area in a hallway, the rug in a living room, curtains over a large window, a king-size quilt, the floor area of a garage, or the area of a driveway.

4. No. An envelope is a very small part of a square metre. The square metre is too large to measure the small envelope accurately.

5. A square metre would be used to measure a basketball court.

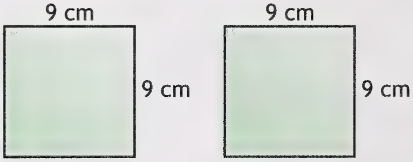
6. **a.** Your arrangement of ones cubes should look like the one that follows.



b. To find the area of the rug, multiply $7 \times 8 = 56$.

c. The area of the rug is 56 m^2.

7. One way to solve this problem is to think of the large pane of glass as two smaller panes. Each smaller pane would measure 9 cm by 9 cm.



Area of one small pane: $9 \times 9 = 81 \text{ cm}^2$

Area of two small panes: $81 \times 2 = 162 \text{ cm}^2$

The area of the glass pane is 162 cm^2.

8. **a.** $\text{Perimeter} = 20 \text{ cm}$

b. $\text{Area} = 24 \text{ cm}^2$

9. **a.** $\text{Perimeter} = 12 \text{ cm}$

b. $\text{Area} = 8 \text{ cm}^2$

10. a. You can find the length and the width by counting the squares along the top and the sides of the rectangle.

b. Perimeter = 16 cm

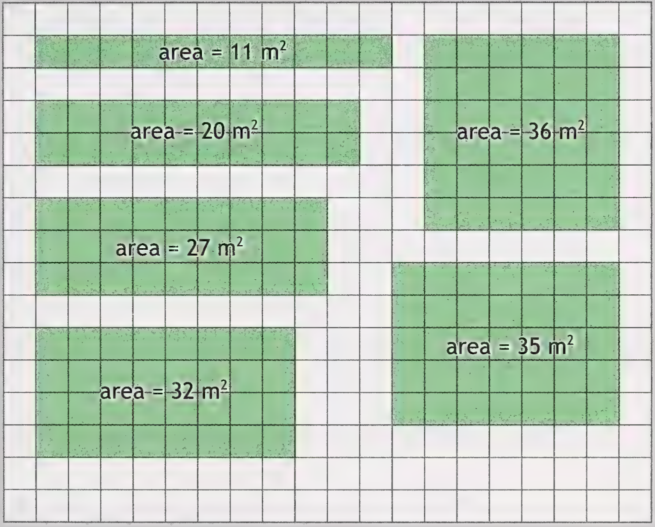
c. Area = 16 cm^2

11. a. Perimeter = 16 cm

b. Area = 12 cm^2

12. **Quest 2000** **Page 124**

There are six possible ways to build a rectangular pen with a perimeter of 24 m.


area = 11 m²
area = 20 m²
area = 36 m²
area = 27 m²
area = 35 m²
area = 32 m²

The greatest area you can enclose with 24 m of fencing is 36 m^2. This is the pen that is 6 m wide and 6 m long.

13. **a.** The area of the square is $10\ \text{cm} \times 10\ \text{cm} = 100\ \text{cm}^2$.
    b. Yes, the area of the two triangles equals the area of the square.
    c. The area of each triangle is $50\ \text{cm}^2$.

14. ***Quest 2000*** **Page 122**

On Your Own

1. **a.** 4.5 square units
   b. 4 square units
   c. 4 square units

2. Figures a. and c. have areas of 2 square units.

3. Figure b. does not have an area of 1.5 square units. The area of Figure b. is 2 square units.

Day 17: Putting It All Together (II)

All activities are to be done in Assignment Booklet 7B. This work will be marked by your teacher.

Day 18: Assessing What You Know (II)

All activities are to be done in Assignment Booklet 7B. This work will be marked by your teacher.

Day 19: How Much Does It Hold?

1. You may have found milk (1 L or 2 L), juice (1 L or 250 mL), pop (355 mL, 1 L, or 2 L), salad dressing (250 mL or 435 mL), and water (500 mL, 1 L, or 2 L). Other items are acceptable.

2. Other foods might include ketchup (500 mL or 1 L), pickles (1 L), mustard (500 mL), taco sauce (455 mL), relish (455 mL), or jam (250 mL). Other items are acceptable.

3. The litre is a bigger unit.

4. The answers will vary depending upon the size of your container. Ask your home instructor to check your estimate and measurement.

5. Most measuring cups are marked with 50 mL, 100 mL, 150 mL, 200 mL, and 250 mL.

6. 250 mL

7. Estimates will vary.

8. 1000 mL $\left(500 \times 2 = 1000 \text{ mL}\right)$

9. 2000 mL

10. Items b., c., and d. would all be measured in millilitres.

11. Liquids measured in litres would include water used in a washing machine, supersize bottles of shampoo or bubble bath, soft drinks, milk, liquid laundry detergent, large bottles of vinegar, and large bottles of syrup or ketchup. Other answers are possible.

12. Products measured in millilitres include canned fruit, canned soup, shampoo, liquid hand soap, cough medicine, pickles, relish, furniture polish, and face cream. Other answers are possible.

13.

Name of Item	Capacity unit (mL or L)
glass of milk	millilitres
glass of orange juice	millilitres
gas	litres
cough syrup	millilitres
bottled water	millilitres (or litres)
paint	litres

14. a. 4 cups
b. 1000 mL
c. **1000 mL** = 1 L
d. 250 mL + 250 mL + 250 mL + 250 mL = 1000 mL

15. a. 8 cups
b. 2000 mL
c. 12 cups
d. 3000 mL

16. a. Your answers will depend upon the size of your pail, cooking pot, and sink. Have your home instructor help you check your chart. Your estimates might be larger or smaller than the actual capacity. Try your estimation skills on other containers not listed on the chart.

b. Answers will vary.

17. You should have circled a. and d.

18. You should have circled b. and possibly c.

19. a. 1 L
b. 1000 mL
c. 2.5 L

20. The order from largest to smallest is Container D, Container C, Container B, and Container A.

Day 20: Solving Problems About Capacity

1. **a.** 60 seconds
   b. 15 mL
   c. $60 \times 15 = 900$ mL
   d. 900 mL $\times 24$ hours $= 21\,600$ mL in one day
   e. $21\,600$ mL $= 21.6$ L

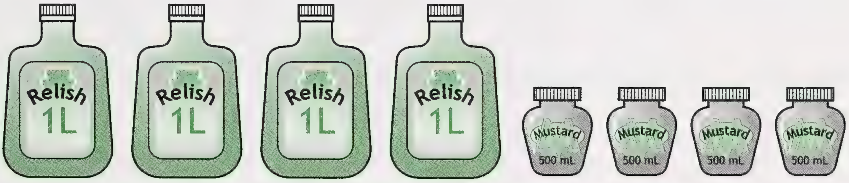
2. 21.6 litres $\times 7$ days $= 151.2$ L

3. **a.** If the tap isn't repaired, **21.6 L** of water will be lost in one day.
   b. If the tap isn't repaired, **151.2 L** of water will be lost in one week.

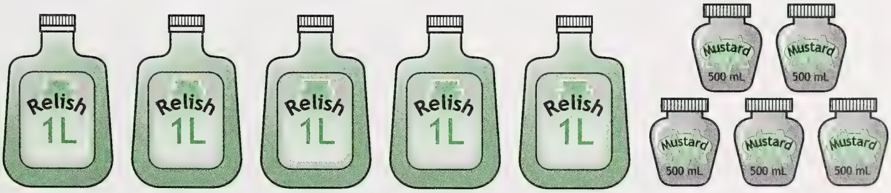
4. You may have answered yes or no. Did you think that much water would be lost?

5. **a.** Your drawings should be similar to these:

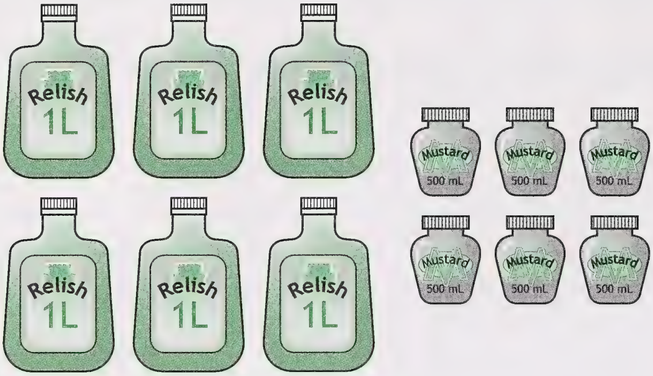
Day 4:


Relish 1L
Relish 1L
Relish 1L
Relish 1L
Mustard 500 mL
Mustard 500 mL
Mustard 500 mL
Mustard 500 mL

Day 5:


Relish 1L
Relish 1L
Relish 1L
Relish 1L
Relish 1L
Mustard 500 mL
Mustard 500 mL
Mustard 500 mL
Mustard 500 mL
Mustard 500 mL

Day 6:



b. 6 L
c. Sue and Tim must buy 3 containers of relish.
d. 3000 mL of mustard
e. 3 L
f. Sue and Tim must buy 3 jars of mustard.

6., **7.**, and **8.** Your answers to these questions will depend upon the bottles you have chosen to use for this activity. Have your home instructor help you check your answers to this activity. Make sure each bottle is labelled.

The capacity of each bottle should be listed.

Your estimates will be **less than** the actual capacity of the bottle.

If you had difficulty giving accurate estimates, try this activity again.

9. a. 2000 mL
b. 75 mL
c. 355 mL + 355 mL = 710 mL
d. 355 mL

10. 3140 mL

11. $3140 \div 10 = 314$ mL

12. a. You may have answered yes.

b. If a cup is 250 mL, each guest will get a little more than a cup, so it is probably enough punch.

13. a. measuring cup
b. measuring spoon
c. measuring cup

14. a. 300 mL **b.** 400 mL
c. 300 mL **d.** 400 mL

Day 21: Learning About Mass

1. Your answers should be similar to the following:

- book
- tractor
- spaceship
- pencil
- sofa
- Earth
- person
- lamp
- desk
- dog
- building

2. a. bathroom scale or doctor's scale
b. balance scale or electronic scale
c. spring scale

3. Your answers might be similar to these:

• spaghetti	500 g
• crackers	450 g
• rice	900 g
• oatmeal	2.25 kg
• cereal	575 g
• peanut butter	500 g

4. A kilogram is larger. The sugar is much heavier than the pasta, but it only weighs a few kilograms. Each of these kilograms must be large. The pasta is light, but measures a very large number of grams. Each of these grams must be small if so many of them are needed.

5. 1000 g = 1 kg

6. *Kilo* means kilogram. It is part of the word *kilogram*.

7. If you wrote down a fruit, vegetable, or type of meat, you are correct. These items are measured in kilograms at the supermarket. Large bags of dog food, laundry soap, food found in the bulk food section, and bags of flour are also sold in kilograms.

8. Your objects could be similar to these:

Object	More Than or Less Than 1 kg?
portable CD player	more than
can of pop	less than
textbook	less than
backpack full of books	more than
pencil	less than
hairdryer	less than

9. Smallest mass: tea bag
tomato
Largest mass: bag of potatoes

10. You should have circled the automobile, the stove, and the nine-year-old student.

11. You should have circled the spoonful of sugar, the pencil, and the address book.

12. and **13.** Many answers are possible.

Your list should look similar to the one shown in the chart, but with different objects listed. Make sure you have recorded your estimates first. You should have recorded the actual measurement after you estimated. Your estimates will be smaller than or larger than the actual measurement of the object. Your estimate might even be the same as the actual mass!

Example

Object	My Estimate of the Mass	Actual Mass
plant in pot	2 kg	2 kg
bag of potatoes	3 kg	2 kg
box of books	5 kg	7 kg
toolbox	8 kg	12 kg

14. a. Your estimates may have been very close or not very close.

b. Many answers are possible. You may have had no close estimate, some close estimates, or all close estimates.

15. a. and **b.** Your objects should be small enough to hold in your hand. Examples of small objects that should be measured in grams include a teacup, a saucer, a calculator, a pencil, a watch, a paperback book, a ruler, and a spoon. Other small objects would be acceptable.

Have your home instructor help you check your answers. An example of three objects in order from smallest to largest follows.

a ruler	15 grams
a bowl	35 grams
a boot	200 grams

16. Your estimates of mass might or might not match your actual measurements. If you had trouble with these questions, do them over again with three different objects.

17. You should have underlined:

a. a hardcover library book
b. a large bag of flour
c. a glass of milk
d. a tube of toothpaste

Day 22: Comparing Kilograms and Grams

1. Brand A is a better buy. Brand A costs $9.50 for 2 kg which is equal to 2000 g. This is cheaper than Brand B, which costs $10.00 for 2000 g.

2. a. Band **A** potatoes are heavier.
b. Brand A potatoes have a mass of **2.5 kg**.

3. Brand B potatoes weigh **2300 g**.

4. a. 2000 g
b. 2.5 kg
c. 4000 g

5. a. 250 g
b. 100 g
c. 1 kg

6. The order from heaviest to lightest is **cookies**, **chips**, and **spaghetti**.

7. a. 600 g 1000 g 2 kg
b. 1 kg 1200 g 2000 g

8. a. Butter, cheese, and sugar weigh more than 1 kg.

b. Rice and crackers together weigh 1000 g.

$650\ \text{g} + 350\ \text{g} = 1000\ \text{g}$

c. Change all the masses to kilograms first.

Butter: 1.3 kg
Cheese: 1500 g or 1.5 kg
Sugar: 2.2 kg
$1.3\ \text{kg} + 1.5\ \text{kg} + 2.2\ \text{kg} =$ **5.0 kilograms**

d. Change 5.0 kg to grams. Five kilograms is the same as **5000 g**.

e. The order from lightest to heaviest is shown.

- crackers (350 g)
- salt (500 g)
- rice (650 g)
- butter (1.3 kg or 1300 g)
- cheese (1500 g)
- sugar (2.2 kg or 2200 g)

9. One kilogram is the same as 1000 g.

$1000\ \text{g} - 440\ \text{g} = 560\ \text{g}$

The girls ate 560 g of ice cream at the party.

10. Five kilograms is the same as 5000 g.

$5000\ \text{g} - 1380\ \text{g} = 3620\ \text{g}$

3620 g of potatoes were used.

11. Division Number Facts

8	9	6	6	7
8	5	3	6	8
4	3	5	4	9
6	8	8	3	6
3	5	9	9	4

12. Multiplication Number Facts

30	36	54	24	28
45	24	64	35	72
25	36	49	63	48
18	15	56	27	32
72	24	81	40	42

Day 23: Learning About Money

1. **a.** 5 pennies
  b. 10 pennies
  c. 25 pennies
  d. 100 pennies

2. **a.** 2 nickels
  b. 5 nickels
  c. 20 nickels

3. **a.** 10 dimes
  b. 4 quarters

4. **a.** 10 one-dollar coins
  b. 20 one-dollar coins

5. **a.** 5 two-dollar coins
  b. 10 two-dollars coins

6. a. If you are counting quarters, skip count by **25**.
b. If you are counting two-dollar coins, skip count by **2**.

7. a. 25 50 75 80 81
b. 25 35 45 55 60

8. This is a partial list of all the combinations of coins that equal one dollar. There are many more combinations possible. Ask your home instructor to check your answer if you do not find your combinations here.

- 95 pennies + 1 nickel = $1.00
- 90 pennies + 1 dime = $1.00
- 85 pennies + 1 dime + 1 nickel = $1.00
- 80 pennies + 2 dimes = $1.00
- 80 pennies + 4 nickels = $1.00
- 3 quarters + 2 dimes + 1 nickel = $1.00
- 3 quarters + 5 nickels = $1.00
- 9 dimes + 10 pennies = $1.00
- 8 dimes + 4 nickels = $1.00
- 2 quarters + 5 dimes = $1.00
- 1 quarter + 1 nickel + 7 dimes = $1.00

9. Yes, you have enough money to buy the book.

10. Possible sets of coins include the following:

- 2 two-dollar coins + 1 one-dollar coin
- 1 two-dollar coin + 3 one-dollar coins
- 2 two-dollar coins + 4 quarters
- 1 two-dollar coin + 2 one-dollar coins + 4 quarters
- 2 two-dollar coins + 2 quarters + 5 dimes
- 1 two-dollar coin + 2 one-dollar coins + 2 quarters + 5 dimes
- 2 two-dollar coins + 2 quarters + 4 dimes + 2 nickels

Other combinations are possible. Check your answers with your home instructor.

11. There are many combinations. Check with your home instructor if you do not find your answers on the list.

- 2 ten-dollar bills
- 4 five-dollar bills
- 10 two-dollar coins
- 20 one-dollar coins
- 1 ten-dollar bill + 2 five-dollar bills
- 1 ten-dollar bill + 5 two-dollar coins

12. **a.** $30.20
b. $47.00

13. **a.** Dimes: 3 Pennies: 5
b. 10 quarters
c. 11 nickels
d. $4.48

14.

$$\begin{array}{r} \$\overset{1}{\cancel{2}}\overset{\overset{9}{\cancel{10}}}{\cancel{0}}.\overset{10}{\cancel{0}}0 \\ -\$14.50 \\ \hline \$5.50 \end{array}$$

You will get $5.50 back.

15. **a.** multiplication and addition

b.

$$\begin{array}{r} \$\overset{1}{3}.\overset{1}{6}5 \\ \times 2 \\ \hline \$7.30 \end{array} \qquad \begin{array}{r} \$\overset{1}{}7.30 \\ +\$15.49 \\ \hline \$22.79 \end{array}$$

Jenna spent $22.79.

Day 24: More About Money

1. The four math operations are adding, subtracting, multiplying, and dividing.

2. **a.** addition
b. subtraction
c. multiplication
d. division

3. **a.** $\$1.60 + \$1.00 = \$2.60$

$\$2.60 \times 4 = \$10.40$

It will cost $10.40 for hot dogs and juice.

b. $\$20.00 - \$10.40 = \$9.60$

You will get $9.60 in change.

c. $\$20.00 \div \$1.00 = 20$

You can buy 20 juice boxes for $20.00.

4. **a.**

$5.50 ⟶	Give back **50 cents**.	Say, “$6.00.”
	Give back **$1.00**.	Say, “$7.00.”
	Give back **$1.00**.	Say, “$8.00.”
	Give back **$1.00**.	Say, “$9.00.”
	Give back **$1.00**.	Say, “$10.00.”
	Give back **$10.00**.	Say, “**$20.00**.”

b. The total amount of change is $14.50.

5. a. $25.45 ⟶	Give back **5** cents.	Say, "**$25.50**."
	Give back **50** cents.	Say, "**$26.00**."
	Give back **$1.00**.	Say, "**$27.00**."
	Give back **$1.00**.	Say, "**$28.00**."
	Give back **$1.00**.	Say, "**$29.00**."
	Give back **$1.00**.	Say, "**$30.00**."
	Give back **$10.00**.	Say, "**$40.00**."
	Give back **$10.00**.	Say, "**$50.00**."

b. The total amount of change is $24.55.

6. a. Estimates will vary, but should be somewhere between 50 and 300.

b. Your answer will depend on how large your cup is.

c. Your estimate might or might not have been close. Try this task again if your estimate was not close. Use different-sized cups filled with pennies.

7. a. If your jar is twice as big as your cup, then you will guess twice as many pennies in the jar. For example, if you counted 175 pennies in the cup, then $2 \times 175 = 350$ pennies. There should be about 350 pennies in the jar.

If your jar looks three times as big as your cup, then multiply the number of pennies in your cup by 3. For example, if you counted 100 pennies in your cup, then $3 \times 100 = 300$. You should guess that there are about 300 pennies in the jar.

b. Your answer might be the same as the explanation in 7.a. You might also explain that you estimated the number of cupfuls of pennies you could fit into the jar.

Day 25: It's About Time

1. a. hours
b. months
c. minutes
d. decade
e. century
f. millennium

2. a. 5 more years

$95+5=100$ years

b. 300 years ago

$3\times100=300$ years

c. 3001

d. 1901

3. a. 80 years

$8\times10=80$ years

b. 20 decades

One century is 100 years. 100 years $\div10=10$ decades
Two centuries is 200 years. 200 years $\div10=20$ decades

c. If you were born in the 1980s, you were born in the eighth decade of the century. If you were born in the 1990s, you were born in the ninth decade of the century.

4. a. January
b. February
c. March
d. April
e. May
f. June
g. July
h. August
i. September
j. October
k. November
l. December

5. a. The winter months are November, December, January, February, and sometimes March.

b. The summer months are May, June, July, August, and early September.

6. **a.** September is the **ninth** month of the year.
   b. May is the **fifth** month of the year.
   c. October is the **tenth** month of the year.

7. Sunday
   Monday
   Tuesday
   Wednesday
   Thursday
   Friday
   Saturday

8. You should have written three of the following:

   - March 14, 1994
   - 14 March 1994
   - 94-3-14
   - 94/3/14

9. May thirtieth nineteen hundred ninety-two.

Day 26: Telling Time

1. You might find a digital clock on your stove, on your watch, on the dashboard of your car, on the TV or VCR, or on your computer. Outside your home, you find digital clocks at hockey games, on street signs, and in airports or bus depots.

2. You might find an analog clock on the wall of your living room, on a bedside night table, on your watch, or on a shelf.

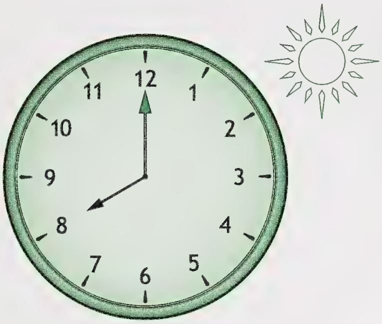
3. The long hand moves faster.

4. The short hand shows that hours are passing. It moves slowly.

5. The long hand shows that minutes are passing.

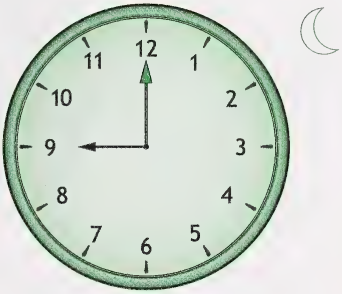
6. a. A.M. **b.** P.M. **c.** A.M.
d. P.M. **e.** P.M.

7. a.


12
1
2
3
4
5
6
7
8
9
10
11

This shows 8:00 A.M.

b.


12
1
2
3
4
5
6
7
8
9
10
11

This shows 9:00 P.M.

8. a. 5 minutes
b. 5 minutes
c. 5 minutes

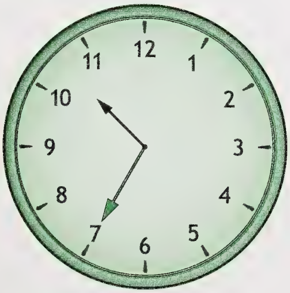
9. a. You stopped at the number 6. This 30-minute point is halfway around the clock.

b. You stopped at the number 12 on the clock. This 60-minute point is sometimes called "the top of the hour."

10. a. 1:30 (You can also call this "half past one.")

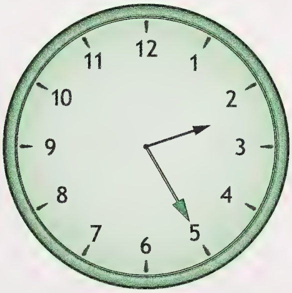
b. 11:45 (Notice that the shorter hour hand is not yet at 12. This means that the time is still past 11:00. It isn't quite 12:00 yet.)

11. a.


12
1
2
3
4
5
6
7
8
9
10
11

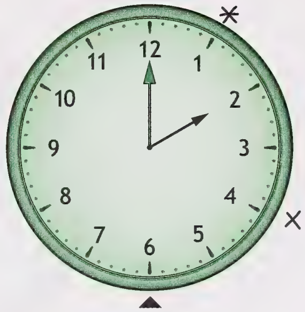
This shows 10:35.

b.


12
1
2
3
4
5
6
7
8
9
10
11

This shows 2:25.

12. Your finished clock should look like this.



The girls left the store at 2:30 P.M.

13. Yes. $5\ \text{min} + 15\ \text{min} + 10\ \text{min} = 30$ minutes. Thirty minutes after 2:00 P.M. is 2:30 P.M

Day 27: Putting It All Together (III)

All activities are to be done in Assignment Booklet 7C. This mark will be marked by you teacher.

Day 28: Assessing What You Know (III)

All activities are to be done in Assignment Booklet 7C. This work will be marked by you teacher.

Image Credits

Some clip art drawings are commercially owned.

Introductory Pages

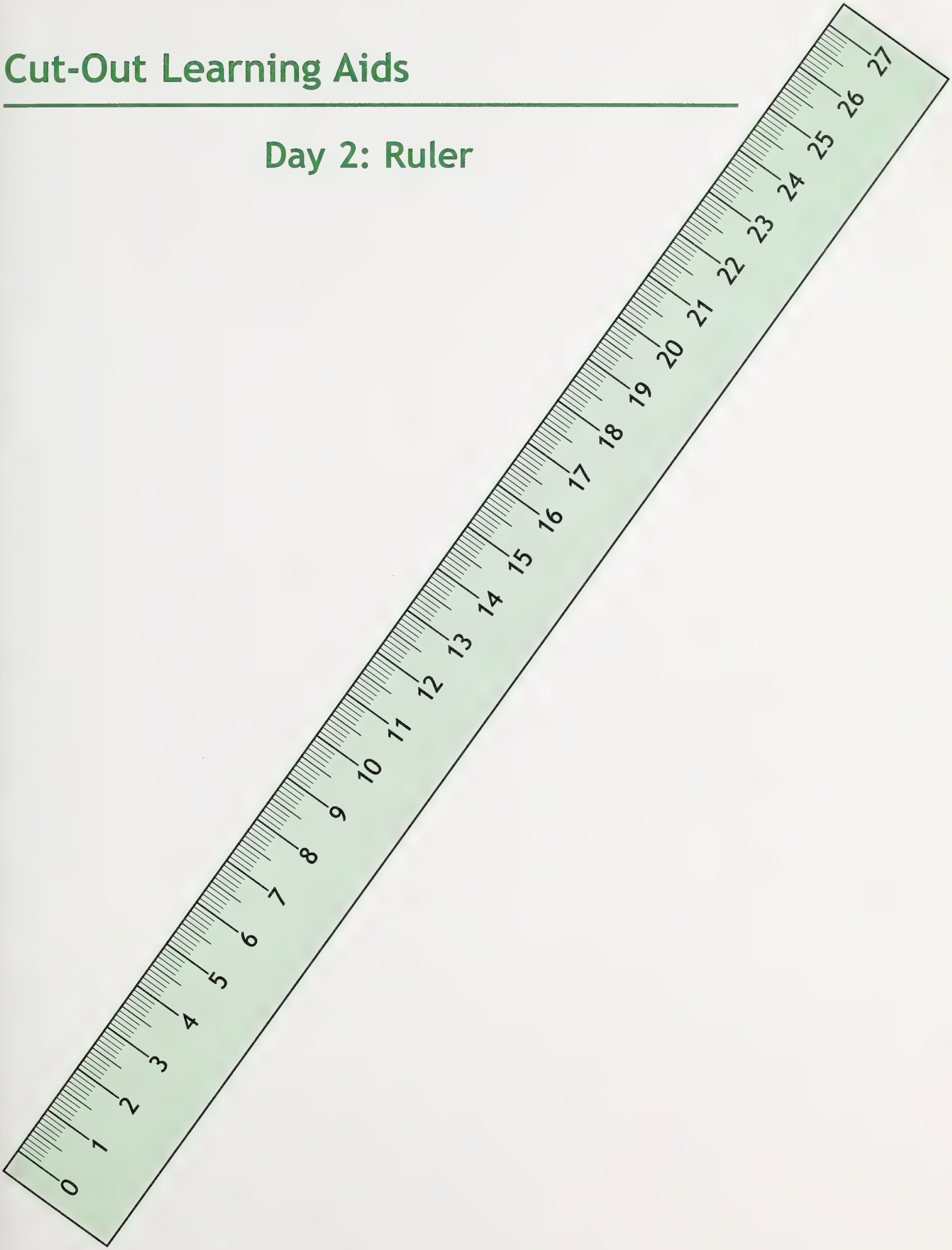
Basic Number Facts: EyeWire, Inc.
Computers: PhotoDisc, Inc.
Journal Writing: PhotoDisc, Inc.

Page

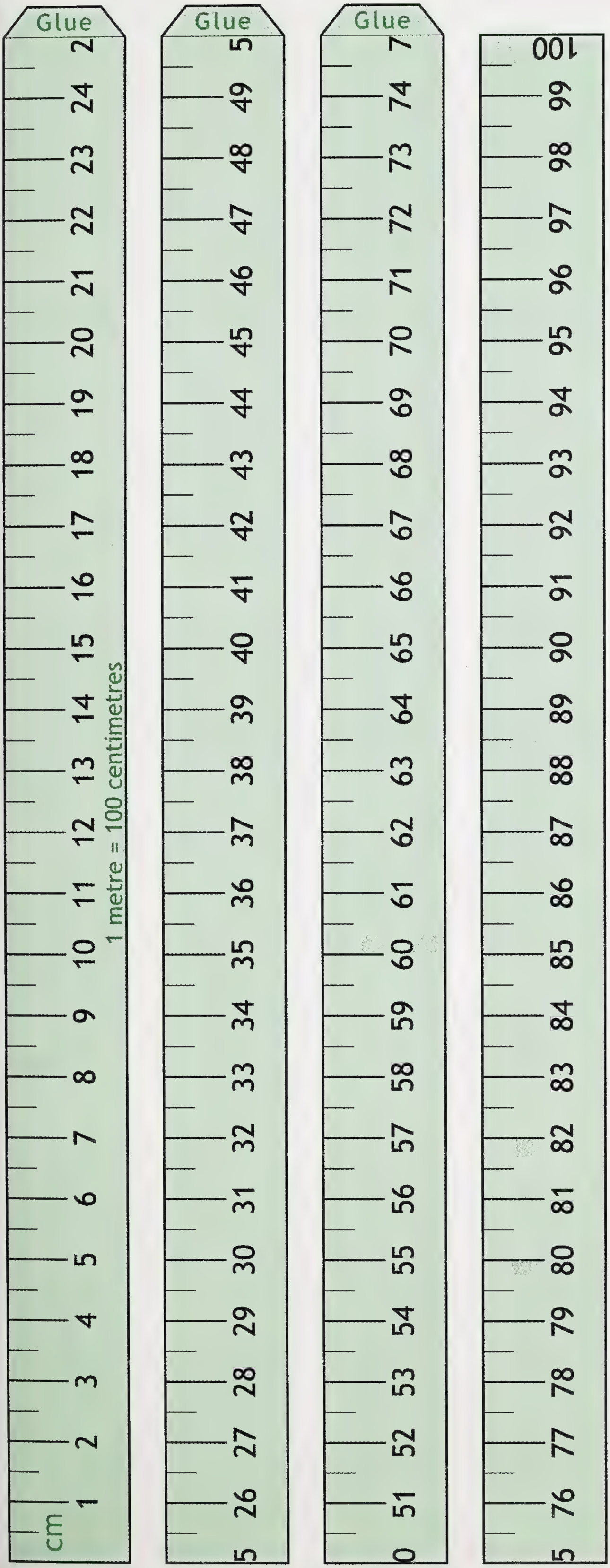
1	PhotoDisc, Inc.
3	PhotoDisc, Inc.
4	© 2000–2001 www.arttoday.com (bottom)
6	Corel Corporation (top)
7	© 2000–2001 www.arttoday.com (map); PhotoDisc, Inc. (tape measure)
16	© 2000–2001 www.arttoday.com
27	© 2000–2001 www.arttoday.com
30	Corel Corporation
40	PhotoDisc, Inc.
49	EyeWire, Inc.
51	EyeWire, Inc.
59	© 2000–2001 www.arttoday.com
75	EyeWire, Inc.
77	EyeWire, Inc.
81	EyeWire, Inc.
82	EyeWire, Inc.
87	© 2000–2001 www.arttoday.com
90	PhotoDisc, Inc. (all)
103	Corel Corporation
123	PhotoDisc, Inc.
146	EyeWire, Inc.
148	EyeWire, Inc.
151	EyeWire, Inc.
160	PhotoDisc, Inc.
162	© 2000–2001 www.arttoday.com (two left-hand bottles)
163	EyeWire, Inc.
164	© 2000–2001 www.arttoday.com
166	PhotoDisc, Inc.
170	EyeWire, Inc.
171	EyeWire, Inc.
175	PhotoDisc, Inc.
176	PhotoDisc, Inc. (all except top left)
179	Corel Corporation
182	PhotoDisc, Inc.
184	© 2000–2001 www.arttoday.com
193	EyeWire, Inc.
197	Corel Corporation
207	PhotoDisc, Inc.
208	PhotoDisc, Inc.
209	PhotoDisc, Inc.
211	PhotoDisc, Inc.
213	© 2000–2001 www.arttoday.com
217	PhotoDisc, Inc.; Image Club/StudioGear/EyeWire, Inc.; PhotoDisc, Inc.
224	PhotoDisc, Inc.
225	© 2000–2001 www.arttoday.com; Image Club/StudioGear/EyeWire, Inc.
238	PhotoDisc, Inc.

Cut-Out Learning Aids

Day 2: Ruler


0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27

Day 6: Metre-Stick


Glue
Glue
Glue
cm
1 metre = 100 centimetres
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49
51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74
76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Cut out all of the strips. Place the strips end to end in the correct order. Glue the strips together.

Day 8: Graph Form

Title: ____

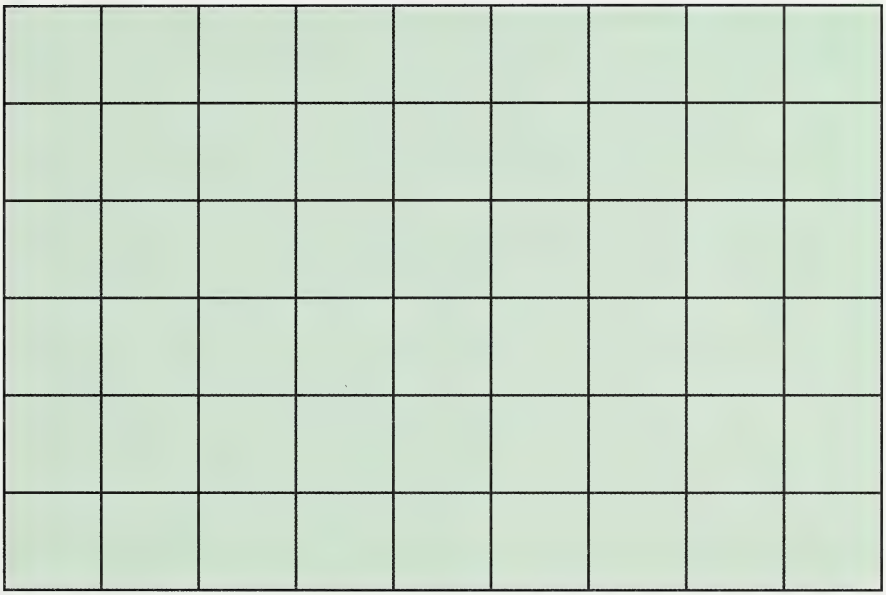
Day 11: Grid Paper

Day 12: Grid Paper

Day 12: Grid Paper

Day 14: Squares

Cut along the solid lines to make a collection of squares.



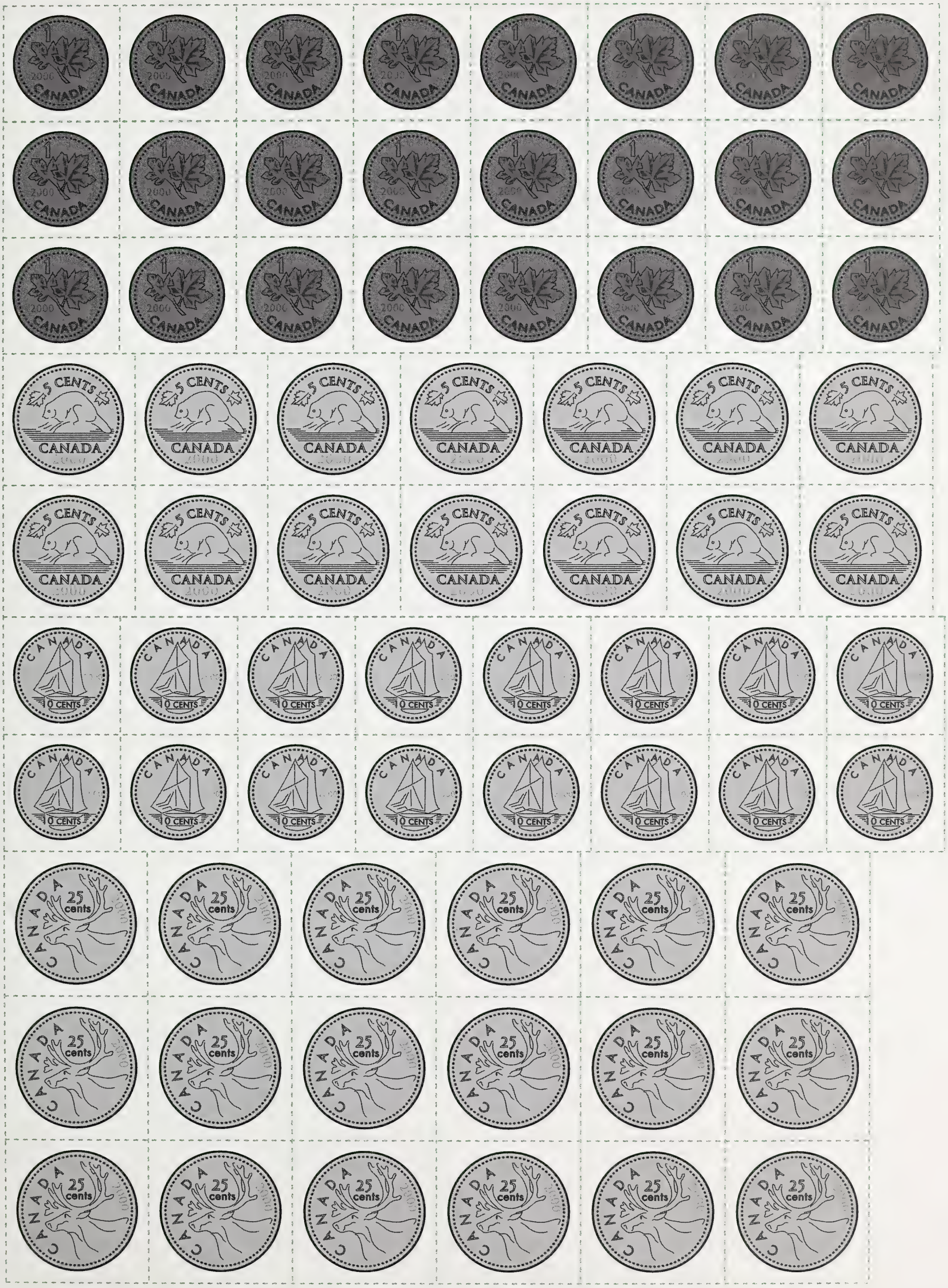
Day 15: Grid Paper

Day 15: Grid Paper

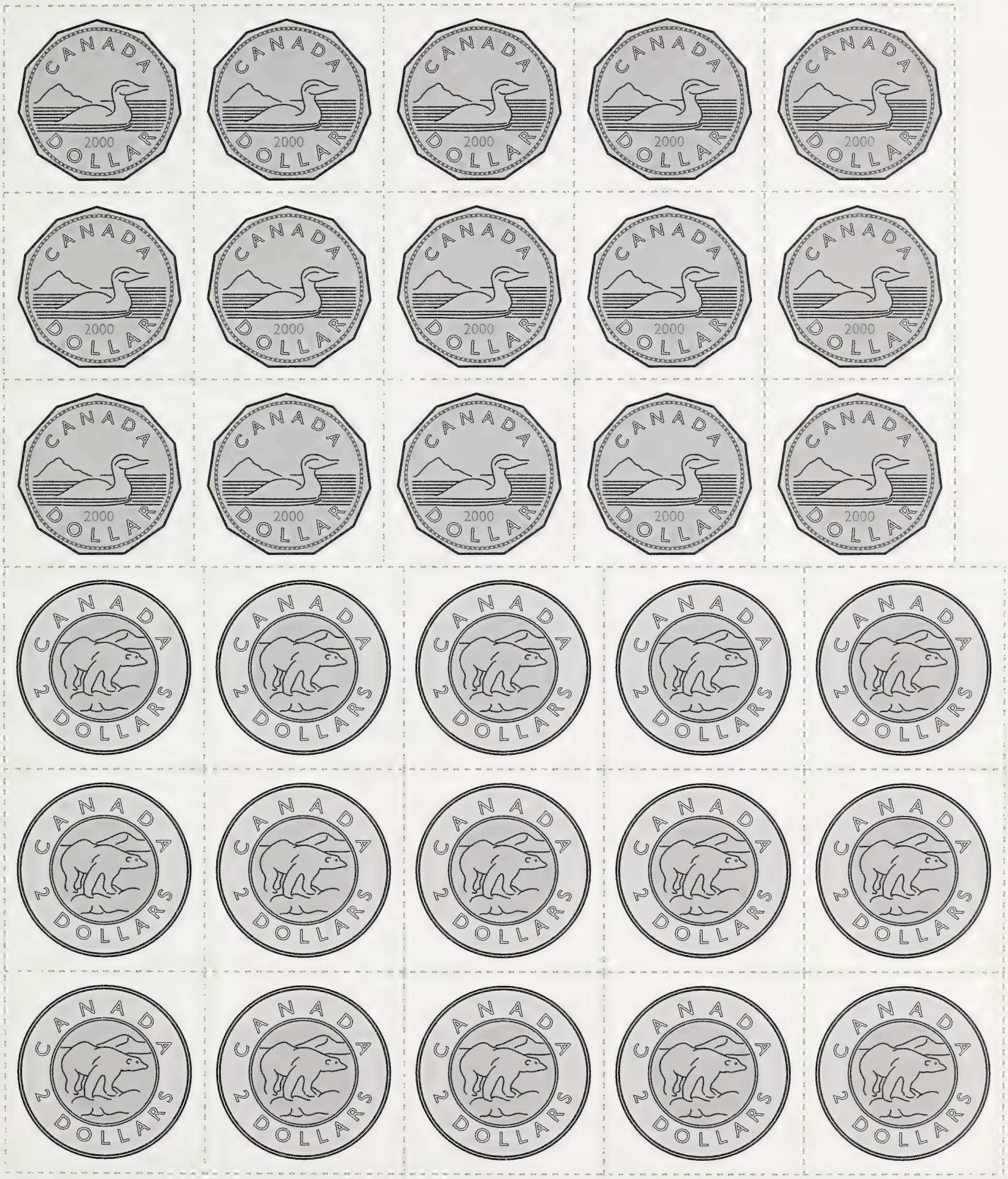
Day 16: Grid Paper

Day 16: Grid Paper

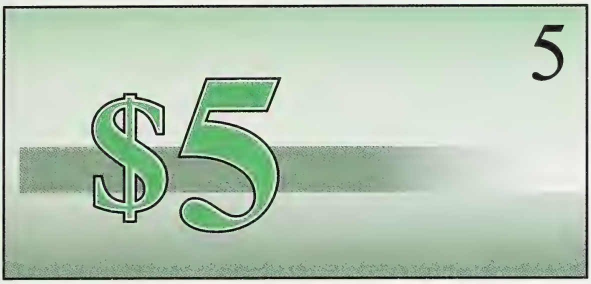
Day 23: Money

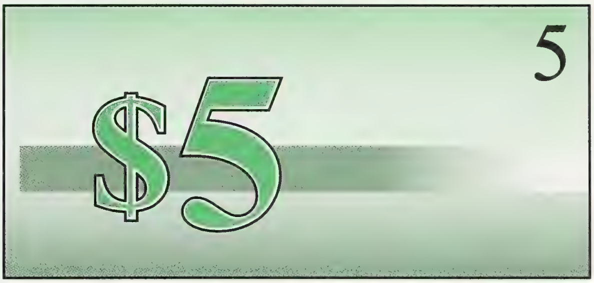

1
2000
CANADA
5 CENTS
CANADA
2000
CANADA
10 CENTS
CANADA
25
cents
2000

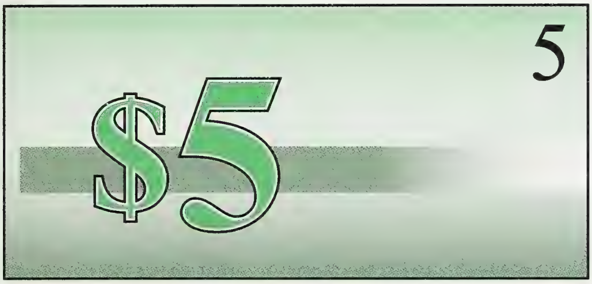
Day 23: Money

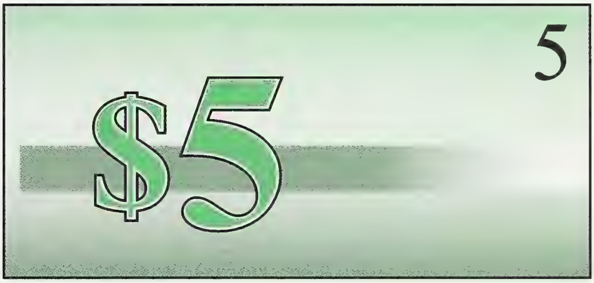

CANADA
2000
DOLLAR
CANADA
2 DOLLARS

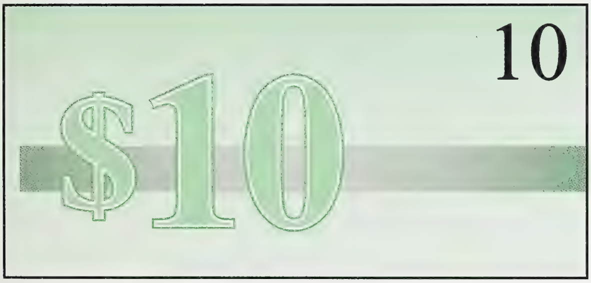
Day 23: Money

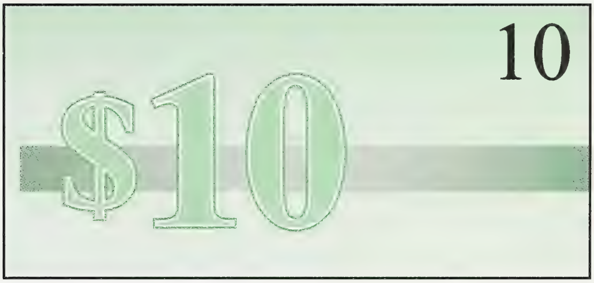


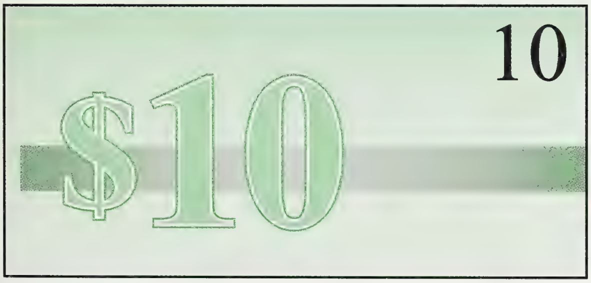


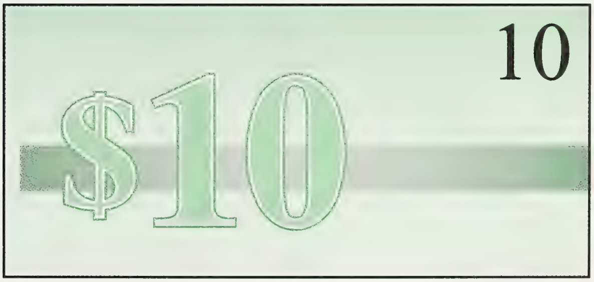


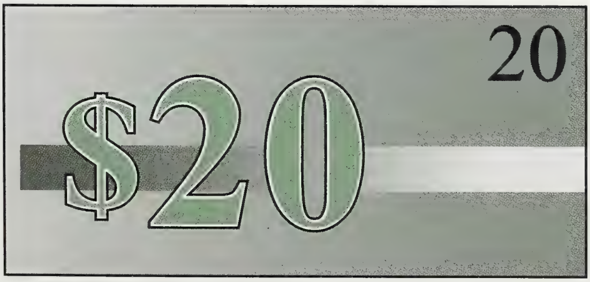


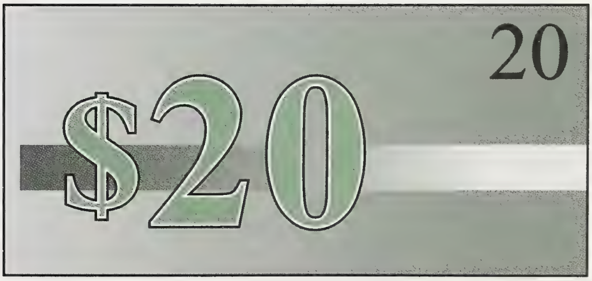






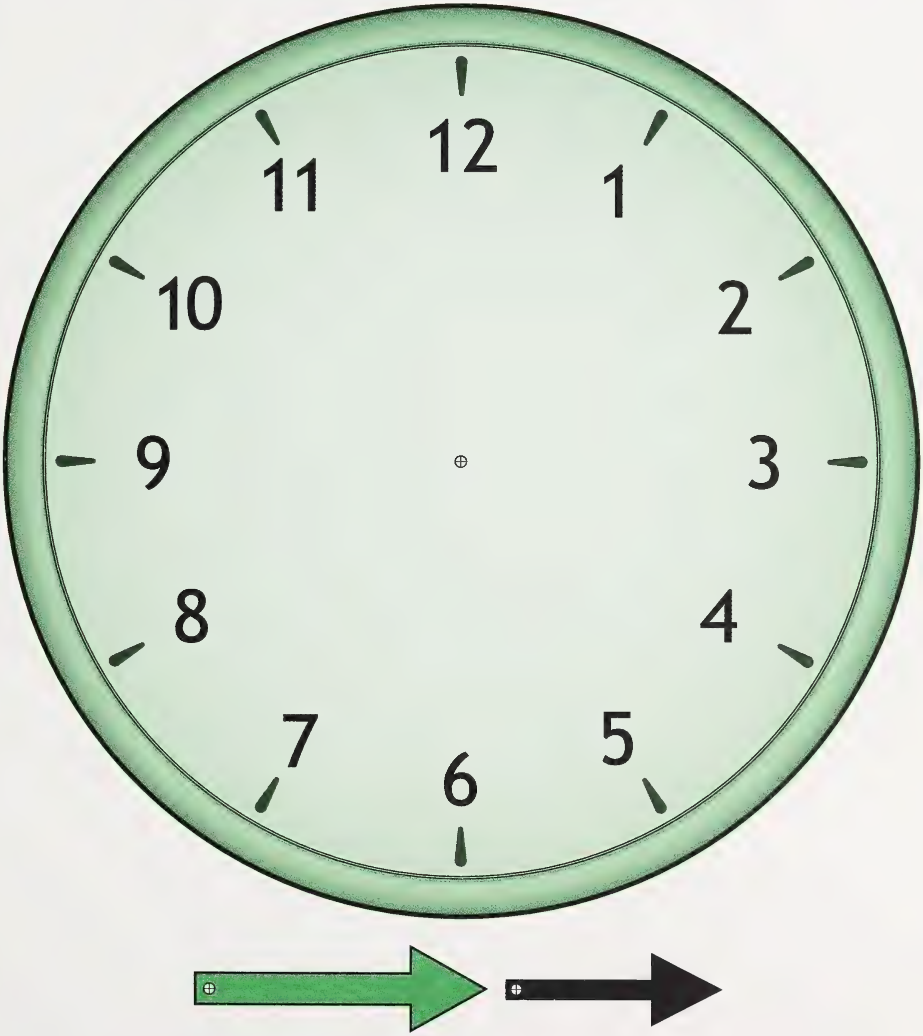




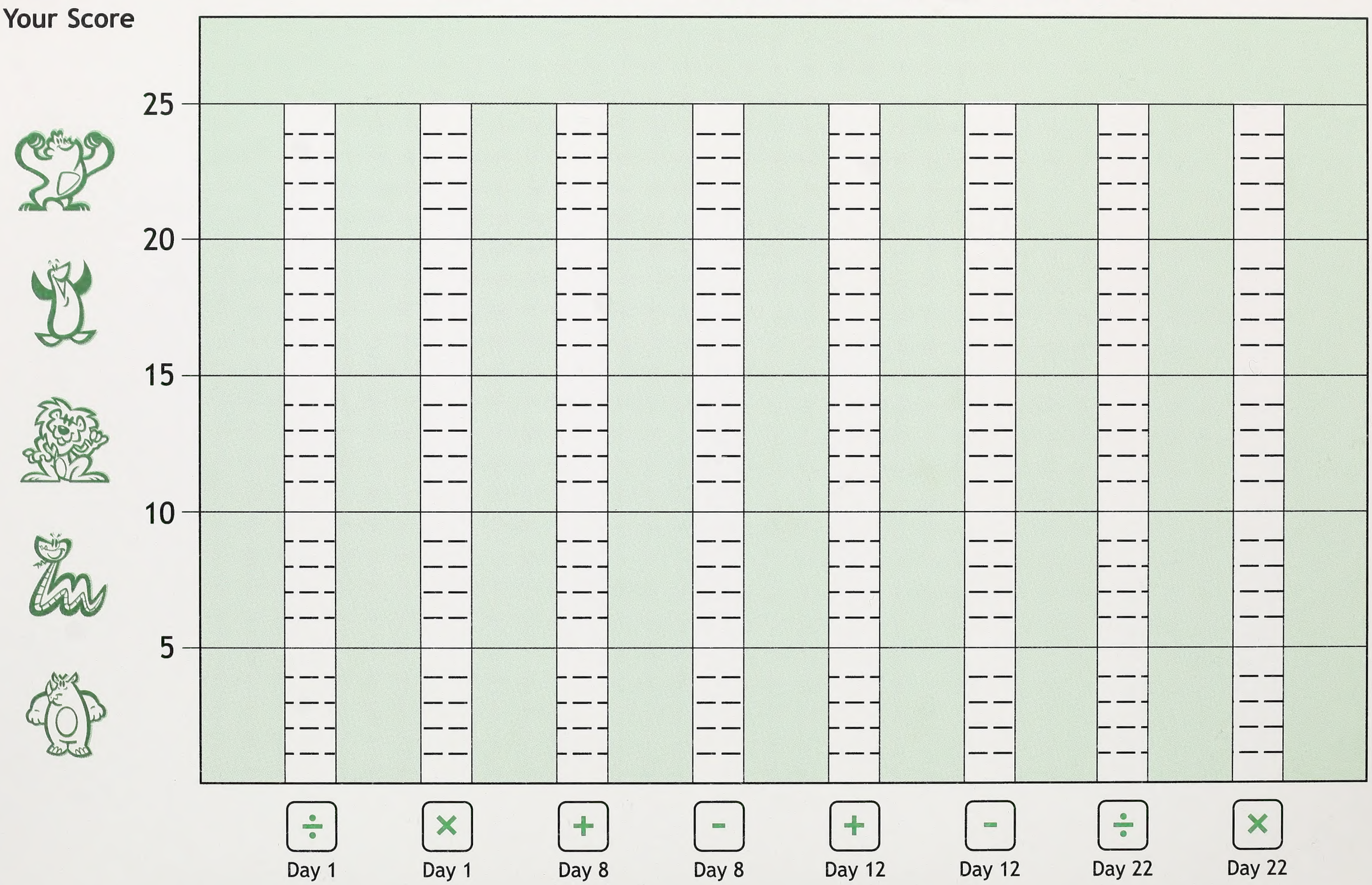


Day 26: Analogue Clock

Carefully cut out the clock face and the hands of the clock. Use a paper fastener or bent paper clip to attach the hands of the clock to the face.


12
1
2
3
4
5
6
7
8
9
10
11

Number Facts Progress Chart for Module 7



Mathematics 4
Student Module Booklet
Module 7

LRDC

2000

0009